



# **FHWA Workshop**

# **Multi-Jurisdictional**

# **Coordination for the Central**

# **Plains/Heartland Region**

May 16-17, 2018  
Kansas City, MO

**Final Report—July 2018**



U.S. Department of Transportation  
**Federal Highway Administration**



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## INTRODUCTION

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On May 16-17, 2018, the Federal Highway Administration (FHWA) convened a workshop in Kansas City, MO titled “Multi-Jurisdictional Coordination for the Central Plains/Heartland Region.” The workshop brought together members of the public and private sector to discuss how they can better connect and work together to address freight transportation and emerging technologies across jurisdictional boundaries in the Central Plains/Heartland region. For the purposes of this workshop, FHWA defines the Central Plains/Heartland region as comprised of central and southern Illinois, Iowa, Kansas, Missouri, and Nebraska.

During the workshop, transportation officials and planning representatives from the five states explored ongoing operations and collaboration, best practices, and opportunities to coordinate on goods movement and emerging transportation technologies. Topics included regional truck parking needs, freight workforce challenges, improving the efficiency of existing infrastructure, and rail investments. Towards the end of the workshop, participants discussed common needs across the jurisdictions and potential collaboration steps for the future.

## WORKSHOP BACKGROUND

Beginning in 2016, FHWA launched a series of workshops and peer exchanges in select areas to identify how FHWA, State Departments of Transportation (DOT), Metropolitan Planning Organizations (MPO), and the private sector can enhance coordination and collaboration to address transportation needs across state and metropolitan boundaries. The Multi-Jurisdictional Coordination for the Central Plains/Heartland Region workshop is part of this series of events. FHWA held prior events in Phoenix, AZ, Philadelphia, PA, Memphis, TN, Atlanta, GA, Providence, RI, Chicago, IL, Columbus, OH, and Houston, TX.

Over the course of several months leading up to this workshop, FHWA Office of Planning staff worked closely with FHWA Division offices within the Central Plains/Heartland Region and the Mid-America Regional Council (MARC) to identify and prioritize workshop topics tailored to the region and develop the workshop agenda. The event took place over a period of one and a half days, and featured a welcome session with remarks from local hosts—the Missouri Department of Transportation (MoDOT), MARC, and the FHWA Missouri Division. This was followed by several sessions involving presentations from numerous state, local, MPO, academic, and private sector representatives, discussion of key issues raised in each session, and breakout sessions on select topics.

This document summarizes the workshop presentations, discussions and next steps identified by meeting participants. Appendix A presents the workshop agenda; Appendix B contains a Central Plains/Heartland Region white paper; Appendix C lists key FHWA contacts; and Appendix D contains a list of workshop participants.

## PART 1—SETTING THE STAGE

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### WELCOME AND INTRODUCTIONS

Spencer Stevens, FHWA Office of Planning, opened the meeting and welcomed the workshop participants. He emphasized that the event is focused on the topic of multi-jurisdictional coordination for freight and emerging transportation technologies in the Central Plains/Heartland Region. The agenda and speakers were selected with these topics in mind, and at the end of the



event the participants will have a greater understanding of the opportunities to collaborate across boundaries.

### **Cheryl Ball, Waterways and Freight Administrator, Missouri DOT**

Ms. Ball gave a warm thank you to FHWA and MARC for hosting the workshop. She made a special point that the focus areas of freight and emerging transportation technologies are critically important to the region. Connected and autonomous vehicle technologies are advancing and they will likely impact the freight industry before passenger vehicles. It is important that we understand and address the barriers to connected and autonomous vehicle technologies due to the shared nature of roadways and traffic in the region; freight does not stop at our political borders and neither will technology. We must find ways to work together so there is continuity for all modes.

### **Kevin Ward, Division Administrator, FHWA Missouri Division**

Mr. Ward welcomed everyone to Missouri and Kansas City and thanked the workshop participants for their attendance, citing the group's passion as the common element bringing everyone together. He noted that coordination is frequent amongst stakeholders in the transportation community and things do not get done without coming together, at many different levels, and working through common issues and challenges. For this meeting in particular, Mr. Ward noted that we have the right people together in one room, and thus posed the question "What are we going to take away from these days together?"

### **David Warm, Executive Director, Mid-American Regional Council (MARC)**

Mr. Warm, echoed the welcome and gratitude of Ms. Ball and Mr. Ward before providing background about regional planning in the greater Kansas City area. MARC is the Council of Governments (COG) and the MPO for the greater Kansas City area. There also are several other counterpart agencies throughout the region. One key distinction is these areas are not merging and morphing together. They each have their own challenges and needs. One common opportunity is the presence of regional political and business leaders who are willing to step up and find ways to fund major transportation projects. Furthermore, with advancements in connected and autonomous vehicle technologies, we are facing a shift in the way the economy and transportation works and there is a great opportunity to learn and stay relevant in the face of these changes. The region has great capacity for freight and logistics; as technology, systems, and processes evolve, we need to think about how the region will continue to be relevant in the global supply chain.

## **STARTING THE CONVERSATION: PLANNING AND ADDRESSING FREIGHT AND EMERGING TECHNOLOGIES ACROSS THE CENTRAL PLAINS/HEARTLAND REGION**

This session provided an overview of workshop goals and set the stage for the remainder of the event.

### **Catherine Ross, Director, Georgia Tech Center for Quality Growth and Regional Development**

Dr. Ross spoke in detail about the purpose of the workshop: to advance the concept of coordinating across jurisdictions, connect and collaborate across public and private sectors, identify common transportation and economic interests in the Central Plains/Heartland Region,



and identify next steps to implement the concept of multi-jurisdictional coordination. She discussed the concept of megaregions, which are areas that are connected through economic interactions as well as proximity. They also have an extra layer of shared social, cultural, and environmental characteristics. Multi-jurisdictional planning and coordination within these broad regions provides an approach to address emerging challenges that transcend traditional borders. Benefits of this approach include enhancing economic development across jurisdictional boundaries, sharing best practices, sharing data and information, and identifying projects or services that enhance the mobility of people and goods across the broad area.

Dr. Ross showed a U.S. map with 13 megaregions, each with a defined boundary. She emphasized that the boundaries are not important. What is important is the framework represented by the map, which identifies regions that are economically linked. The boundaries, and thus the framework, are changeable depending on the topic, whether it is transportation or another issue. She showed a different U.S. map with e-commerce warehouses and key transportation infrastructure overlaid on the megaregion boundaries. The map shows that these key economic assets are concentrated in the megaregions.

FHWA provided a Central Plains/Heartland Region white paper to attendees prior to the workshop (see Appendix B). The paper describes the region in terms of its key transportation-related characteristics and highlights transportation challenges and opportunities. The Central Plains/Heartland Region accounts for 8 percent of the national population, and makes up roughly 12 percent of the interstate system. The region's location in the center of the country puts residents and businesses within a short travel distance of major population centers. This location makes the region attractive to e-commerce providers; 85 percent of the U.S. population can be reached from the region within two days or less. A few of the region's biggest challenges include safety, maintenance/state of good repair, truck parking, and data and funding. The region's opportunities include building on existing partnerships and emerging transportation technology.

## Q&A/Dialogue

**Question for Dr. Ross:** What are some of the challenges and opportunities concerning relationships between different megaregions?

**Answer from Dr. Ross:** These inter-region relationships are the keys for opportunities and the Central Plains/Heartland Region's location offers several gateways to other regions. Gateways are places where corridors (transportation, economic, or otherwise) cross boundaries at any level: megaregional, state, regional, or local. These corridors become opportunities for investment with gateways serving as opportunities for coordination and collaboration. Transportation is economic development and coordination efforts foster that development.

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**Question for Dr. Ross:** What is the importance of the boundaries shown on the map during the presentation?

**Answer from Dr. Ross:** The precise boundaries are not important, and they will change over time as population, economic activity, and other factors change. The key is to embrace proximities and embrace opportunities with regions near and far.



## **MULTI-JURISDICTIONAL COLLABORATION IN ACTION: PUBLIC AND PRIVATE SUCCESS STORIES**

In this session, moderated by James Garland, FHWA, three speakers described existing partnerships between local, regional, state, and private sector partners resulting in mutual benefit within the Central Plains/Heartland region.

### **Scott Smith, Chair, Civic Council of Greater Kansas City**

Mr. Smith serves as the Chair for the Civic Council of Greater Kansas City. The Council is a metro partner for the Heartland Civic Collaborative (HCC), which is an initiative uniting four Midwest metros—Des Moines, Kansas City, Omaha and St. Louis—to collectively strengthen the Heartland’s competitiveness in the global economy. Mr. Smith explained that as the national conversation about megaregions grew, another conversation began about the Heartland and where it is headed. The mission of the HCC is to position the Heartland as a megaregion that competes successfully in the global market by capitalizing on collective assets, both public and private. He explained that transportation is one of six priorities of the HCC, along with water, energy, life sciences, entrepreneurship, and connectivity.

Mr. Smith described the HCC’s three key transportation goals: Heartland Connectivity—movement of people and goods facilitates interaction among the Heartland metros; Global Connectivity—capacity or condition are never constraining factors in the Heartland region’s global freight flows; and Intermodal Movements—the transportation system provides seamless and synergistic movement of people and goods among modes and to national and global networks. To achieve these goals, the HCC developed strategies addressing planning, technology, funding and financing, facilities projects, operations, and legislative advocacy. Particular strategies include the development of a Heartland Long Range Plan, application of Heartland TIGER grants; and development of relationships with legislative partners.

### **Davonna Moore, Assistant Bureau Chief-Transportation Planning, Kansas DOT**

Ms. Moore serves as the Project Manager for the Mid America Association of State Transportation Officials (MAASTO) Truck Parking Information and Management System (TPIMS) project. TPIMS is a multistate, multiregional project focusing on providing reliable information on safe and convenient truck parking for truckers. The end result of the project will help commercial truckers make safer decisions on where to park. Several aspects of this effort required decision-making among the state partners. Currently, the project includes 132 public and private sites in Kansas, Iowa, Minnesota, Wisconsin, Indiana, Ohio, Michigan, and Kentucky. The biggest factor in the success of the project was the aggregation of data from state partners to a single data repository, which took significant interagency coordination and collaboration. The project focuses on the collection and distribution of data to make it available without a fee. The goal is for third party developers to work the data into their systems and provide information through dynamic highway signs to truck drivers while on the road. The hope is to expand the system nationwide.

### **John Nations, President and Chief Executive Officer, Bi-State Development**

Mr. Nations serves as the President and Chief Executive Officer for Bi-State Development and its diverse enterprises, which include Metro Transit public transportation, tourism at the Gateway Arch, owner and operator of St. Louis Downtown Airport, the St. Louis Regional Freightway, and the Bi-State Development Research Institute. The organization and its five enterprises promote





economic development in the eastern Missouri and southwestern Illinois region. Mr. Nations noted that the region's farmers are becoming more efficient, but the transportation methods and system are not keeping pace. Global factors, such as the expansion of the Panama Canal, will have major impacts on the Heartland. Being prepared to evolve with the global market is important for the economic viability of the region. Ports on the west coast are currently the major suppliers to the heartland area. The Mississippi River is a huge opportunity for supply in this region. One of the St. Louis Regional Freightway's major accomplishments was establishing partnerships and bringing people to the table. As a result, St. Louis is now in talks with the Port of New Orleans and the Port of Plaquemines.

## Q&A/Dialogue

**Question for panelists:** How is the TPIMS project and St. Louis Freightway project funded?

**Answer from Ms. Moore:** TPIMS is primarily funded by a TIGER grant along with local contributions.

**Answer from Mr. Nations:** The Merchant Bridge Rail project was funded through an INFRA grant and a Railroad Rehabilitation and Improvement (RIFF) loan through the Federal Railroad Administration (FRA). They are constantly exploring new funding options including potential private support through Bi-State Development.

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**Question for Ms. Moore:** Does TPIMS incorporate data on availability of electric parking spaces to reduce the need for truck idling, or will this information be provided to truckers in the future?

**Answer from Ms. Moore:** The data will be provided if it is made available from partner states. Parking utilization analysis is a facet of future efforts.

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**Question for Mr. Nations:** What are the mutual benefits of public and private partnerships from the planning perspective.

**Answer from Mr. Moore:** Bringing the railroads and the MPOs together resulted in prioritizing the Merchant Rail Bridge rehabilitation as a key project in the region. The railroads will benefit greatly from the upgrades to the bridge, and the MPO is able to prioritize projects based on the collaboration and feedback.

## PRIVATE INDUSTRY PERSPECTIVES ON FREIGHT AND ECONOMIC DEVELOPMENT NEEDS

In this session, moderated by Tamiko Burnell, FHWA, three speakers from the private sector discussed their perspectives on transportation in the Central Plains/Heartland Region and the importance of coordinating transportation planning across boundaries.

### John Wagner, Chief Customer Officer, Wagner Logistics

Mr. Wagner has been involved in the transportation and warehousing industry for 42 years at Wagner Logistics. He serves in leadership roles at the Greater Kansas City Chamber of Commerce's Transportation Committee, and is a past Chairman of Kansas City SmartPort.

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Mr. Wagner discussed the state of the shipping industry, which is currently volatile. Increasing shipping costs are having a direct impact on revenues and profits. He cited limited supply of workers as the root cause of these problems. He very clearly stated that there is a significant shortage in workforce, which in turn causes diminished capacity and increased rates. He noted that the trucking industry is very focused on safety. While this is a positive aspect of the industry, it does pose challenges in finding qualified truck drivers.

### **Drew Thompson, Director, Black & Veatch Data Center /Mission Critical Facility**

Mr. Thompson is currently working on the Missouri Hyperloop feasibility study and brought the group up to speed on the goals, challenges, and opportunities of bringing Hyperloop to Missouri. Missouri is ideal for Hyperloop for a variety of reasons. The route, from Kansas City to St. Louis, would predominantly be within a single jurisdiction and it would be primarily flat and straight. These conditions allow for a true investigation of the specifics of developing a Hyperloop and the coordination needed to plan for the route and terminals. A Hyperloop would offer passenger and freight opportunities for Missouri, so a key consideration is how other modes will be tied to Hyperloop to allow for a seamless transition for freight. A major factor for viability is the expected demand for ridership and freight, which will be forecasted leveraging current data from other modes of transportation.

### **Tony Reinhart, Director of Governmental Affairs (Midwest/Southern Region), Ford Motor Company**

Mr. Reinhart is responsible for implementing Ford Motor Company's legislative, Government and community affairs programs in a multi-state region. He provided insights into the role of public infrastructure on private operations, challenges facing the freight industry, and new and emerging technologies. Transportation is at the core of Ford's business in numerous ways. The company relies on thousands of daily inbound and outbound trucks in the region to deliver parts to their factories as well as transport finished vehicles from their factories. Therefore, it is critical that roads stay open. One freeway closure may result in production stoppages or slowdowns and mean significant loss of revenue and profit. In the past, Ford has partnered with states to improve public roads, resulting in roadway network improvements for the public and enhanced efficiencies for Ford. Ford considers global changes in urbanization, growth of the middle class, air quality regulations, and consumer attitudes as it plans for the future. Mr. Reinhart explained that moving forward, Ford is embracing smart vehicles in a smart world. Ford's long term vision is to work with cities to enhance mobility and connectivity.

### **Q&A/Dialogue**

**Question for panel:** What is the expected timeline for when autonomous vehicles will enter the trucking fleet?

**Answer from Mr. Reinhart:** Connected vehicle technology such as truck platooning is much closer on the horizon and autonomous vehicle technology is not up to speed yet. Even if we figure out the technology there is still uncertainty about how to regulate it. There also needs to be a mechanism for insuring autonomous vehicles.

**Answer from Mr. Wagner:** Autonomous vehicles for freight will be an evolution, not a revolution, and we still need to solve our workforce issues in the near term.



**Question for Mr. Wagner:** Will vehicle technology make it possible to reduce time spent on the road, which is a particular barrier for people considering the trucking profession?

**Answer from Mr. Wagner:** Most drivers are local or regional. The long-haul job is rarer, but those particular drivers want to be out on the road as much as possible because they get paid by the mile. However, if there were more dedicated routes, switching drivers and platooning freight across longer distances would be more viable.

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**Question for panel:** If widespread implementation of truck-only lanes will facilitate the enhancement of connected and autonomous vehicles, will the private sector see a benefit to financially supporting the development of these corridors?

**Answer from Mr. Reinhart:** His initial thought is these corridors would facilitate and enhance the technology, but at what cost, and is that cost viable?

**Answer from Dr. Ross:** Some studies show benefits to truck only toll lanes, but there is not necessarily a known tipping point.

## **PUBLIC PRIVATE PARTNERSHIPS AND MANAGING REGIONAL ASSETS**

In this session, two speakers discussed how their organizations work to link business opportunities with assets and existing capabilities in the greater Kansas City and Wichita areas.

### **Chris Gutierrez, President, KC SmartPort**

Mr. Gutierrez is the President of KC SmartPort, Inc., a non-profit economic development organization focused on freight based economic development in the greater Kansas City region. KC SmartPort was formed after a study in the late 1990s identified the need for a single organization devoted to growing the freight economy in the region. He discussed the operations of KC SmartPort. The organization's economic development efforts are focused on attracting distribution, warehouse and manufacturing to the region. The organization also provides leadership to the supply chain industry in Kansas City and focuses on advanced energy and transportation related companies. It produces a Transportation Outlook report each year that summarizes recent global trade trends and trends for each major mode.

### **Karyn Page, President and Chief Executive Officer, Kansas Global Trade Services, Inc.**

Ms. Page currently serves as President and CEO of Kansas Global, a full-service trade advisory firm, helping companies and cities leverage their capabilities and global reach. She discussed the organization's efforts to successfully create regional Export and Foreign Direct Investment plans and creating performance metrics. To date, small businesses have achieved tens-of-millions of dollars in new exports and earned the region recognition as a top exporter in the Nation.

## **Q&A/Dialogue**

**Question for panel:** Please elaborate on the region's export plans.

**Answer from Ms. Page and Mr. Gutierrez:** Within the Central Plains/Heartland Region there are currently four export plans. These plans are tied to metropolitan areas rather than to states, and typically focus on company needs, including technical expertise and technical information. Kansas Global Trade Services is the central contact for connecting businesses with this information. Wichita is in the fourth year of their export plan and Kansas City is in their third year.



## **PART 2—CURRENT AND NEAR-TERM MULTI-JURISDICTIONAL INITIATIVES**

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### **STATE DOT PERSPECTIVES ON FREIGHT, EMERGING TECHNOLOGIES, AND MULTI-JURISDICTIONAL COORDINATION**

In this session, a member of each state DOT discussed freight, emerging technologies, and multi-jurisdictional coordination activities in their state. Brandon Buckner, FHWA Office of Planning, facilitated the session. Remarks made by each speaker are summarized below, followed by a summary of the Q&A session.

#### **Illinois Department of Transportation (IDOT)**

Jim Durako coordinates freight planning for IDOT's Bureau of Planning. He reported that IDOT recently received a Federal grant for improving the I-57 corridor in southern Illinois and is reviewing the possibility of additional funding to make further improvements. Illinois is expecting a 40 percent increase in freight tonnage by 2045. The state is a crossroads for freight, trailing only Texas and California in terms of tonnage, ton miles, and value. Illinois is the only state in the region currently experiencing a decline in population. A significant portion of the Truck VMT in Illinois is pass through traffic; these travelers generally do not contribute to the tax base to maintain infrastructure. IDOT has partnered with the Iowa DOT and local planning organizations in Iowa and Illinois to develop a regional freight plan that includes four counties in Iowa and four counties in Illinois and also is working with MoDOT to develop a joint analysis of Missouri and Illinois rail freight data. In updating the state freight plan, Illinois established the Illinois Competitive Freight Program to identify projects for funding utilizing the freight formula funds provided under the FAST Act. Through this recent call for projects, 46 applications were received, which included internal applications from IDOT, as well as applications from MPOs, counties, municipalities, and ports. Selected projects will be included in the freight investment plan section of the updated state freight plan.

#### **Iowa Department of Transportation (Iowa DOT)**

Craig Markley is the Director of Iowa DOT's Office of Systems Planning, which is responsible for long-range planning, traffic data collection, mapping, forecasting and modeling and the administration of state and Federal grant programs. Mr. Markley reported that in Iowa, roughly 80 percent of freight moves by truck and that 20 to 25 percent of the cost of goods is related to transportation. He echoed the need for more truck drivers; allowing drivers aged 18 to 21 to drive commercial vehicles may alleviate the driver shortage issue. Iowa is currently investigating lock and dam projects to improve waterways as a means for transporting freight. The goal is to project future waterway freight movements to emphasize how system improvements will help with reliability. Mr. Markley noted the need for uniform and universal signage for alternative fuel facilities, not just along alternative fuel corridors but throughout the region.



### Kansas Department of Transportation (KDOT)

John Maddox serves as program manager for KDOT's freight and rail unit. Kansas is a multimodal state, with four Class I railroads, 11 short line railroads, and significant over size/over weight trucking operations. Kansas completed a freight plan last year as well as a statewide rail plan. The state Freight Advisory Committee is comprised of representatives of the state, MPOs, railroads, and other members of the freight community. As a result of a Committee recommendation, two rural transload facilities have been opened in the state. KDOT convened a five-person executive committee to determine the current state of freight in Kansas as well as the future of freight. The committee identified technology as a top priority and as a result, KDOT is conducting extensive technology research for various modes. Mr. Maddox announced Kansas will hold a freight-planning summit in May of 2019.

### Missouri Department of Transportation (MoDOT)

Cheryl Ball is MoDOT's Waterways and Freight Administrator at the Missouri Department of Transportation. Approximately 50 percent of Missouri's good movement occurs by truck, which is significantly lower than other states in the region. Truck/work zone passage is a major initiative in the state; a key goal is to open communication and ensure work zones are truck friendly and truckers know where work zone locations are in order to avoid them if possible. Missouri is in the process of updating their statewide long range transportation plan. As such, they will coordinate a statewide freight plan update with the final long range plan. Missouri frequently collaborates with other states through MAASTO and with other regions and jurisdictions within the Central Plains/Heartland Region. Ms. Ball noted the opportunity they have with moving container vessels through the Mississippi.

### Nebraska Department of Transportation (NDOT)

Mark Fischer is the Assistant Planning Engineer for NDOT's Intermodal Planning Division. Nebraska has been very supportive of transportation funding for infrastructure projects, which has allowed for growth. He noted that the benefits of transportation projects need to be clearly demonstrated to gain support for funding. Nebraska recently completed an update of their statewide freight plan and completed a supply chain optimization project. Nebraska has two multistate MPOs, which necessitates collaboration with neighboring jurisdictions. Nebraska also is working with other states on truck parking optimization.

### Q&A/Dialogue

**Comment from Ms. Ball:** In terms of truck parking, the cost of real estate is a barrier to private development of truck stops. If a DOT were to buy the land the companies would be more willing to develop new facilities and lease the land from the DOT.

**Question for panel:** Are there any issues with rail yard capacities, given recent trends with development and urbanization.

**Answer from Mr. Maddox:** In Kansas, the railyards belong to the railroads and to his knowledge there are no current concerns with capacity.



## PLANNING FOR TRANSFORMATIVE TECHNOLOGIES

In this session, moderated by Brandon Buckner, FHWA, three speakers discussed their organization's role in planning for connected and autonomous vehicles.

### **Mike Floberg, Director of Innovative Technologies, KDOT**

Mr. Floberg spoke on KDOT's proactive attitude towards emerging technologies including autonomous vehicles and truck platooning through connected vehicle technology. Kansas developed a statewide autonomous vehicle task force to address legislative and technological concerns and promote coordination. In the next year, they hope to pass legislation to allow for testing of autonomous vehicles. Despite guidance from the American Association of Motor Vehicle Administrators and upcoming guidance from NHTSA, states should wait for Federal legislation before finalizing their own legislation regarding AV. Kansas is simultaneously working on laws, regulations, and communication concerning truck platooning. The state also is working with MAASTO and the Mid-American Freight Coalition (MAFC). Technology may augment the shortage of qualified truck drivers if needed. Mr. Floberg said the need for autonomous vehicles is based in safety, aging populations, and growing urbanization trends. He also expressed the need for states to work with technology manufacturers; not all equipment manufacturers feel the need to work with DOTs.

### **Cheryl Ball, Waterways and Freight Administrator, MoDOT**

Ms. Ball explained Missouri has made the decision to not be a leader in connected and autonomous vehicle implementation. Missouri held a summit in December 2017 to inform participants from state, local, regional, and private groups on the status of emerging technologies and expectations moving forward. During the summit, participants were polled about their attitudes toward autonomous vehicles. The results show that while a large percentage of people would ride in an autonomous vehicle, only a small fraction of people would be comfortable putting their child in an autonomous vehicle traveling at high speed. A challenge for Missouri is knowing how to make wise investments at different stages of autonomous vehicle fleet integration. Missouri is concerned with how advanced technologies are going to work as they move across borders. Ms. Ball noted that while we will eventually figure out how to move freight with connected and autonomous vehicles, there are concerns with how first and last mile issues will be handled.

### **Mike Grigsby, Vice President of Marketing and Technology, Kansas City Area Transportation Authority (KCATA)**

Mr. Grigsby commented that autonomous vehicles are the new space race. One of KCATA's big challenges is policy governance of the emerging technologies. In terms of planning, the strategies we are using today are going to affect the future much faster than what we have experienced in the past. We need to be open to changing what we planned three months ago, as it becomes out of date. Mr. Grigsby also noted that it is important to grow our appetite for pilot projects and experimentation. We have to get comfortable with the idea that a large number of pilot projects are not going to succeed, but we will learn from them and move on to the next trial. He explained that technologies we have today, such as the smartphone, have had immense impacts that we did not predict when the technology was introduced. We need to keep this in mind as we introduce new and emerging technologies to the transportation world.



## Q&A/Dialogue

**Question for panel:** What is being done to improve low technology infrastructure, such as striping and lane markings, to facilitate high-tech solutions, and how can agencies plan and budget for both low and high-tech infrastructure?

**Answer from Mr. Floberg:** This is one of the core challenges for agencies. Original Equipment Manufacturers (OEMs) need to work with DOTs to understand how the existing infrastructure must adapt to the technology, and how the technology can be enhanced through existing or planned DOT initiatives.

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**Question for panel:** Are public agencies working with insurance agencies on the integration and adoption of new technologies?

**Answer from Mr. Floberg:** Insurance companies are a part of the Kansas Autonomous Vehicle Task Force. Conversations have started, but at this point the insurance companies do not have answers. A major issue is going to be how to determine who the liable party is.

**Answer from Ms. Ball:** Insurance companies were present at their December Summit. The banking industry is also concerned about the question of who will own vehicles in the future.

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**Question for panel:** Are there any partnerships, through either MAASTO or other forums, for states to work together on these issues.

**Answer from panelists:** There are many informal conversations and collaborations underway, but nothing formal at this point.

## THE FUTURE OF THE HEARTLAND IN NORTH AMERICAN FREIGHT MOVEMENT

In this session, two speakers discussed the presence, needs, and opportunities for rail in the region.

### **Kelley Anderson, Vice President Sales and Marketing, Kansas City Southern Railway**

Mr. Anderson is vice president sales and marketing for the automotive business unit of Kansas City Southern (KCS). KCS is the smallest of the Class One railroads, but has significant operations in the Heartland. Many of the shipments originating in the Heartland are agricultural products and automotive parts headed for Mexico. Many KCS northbound freight movements are finished vehicles headed into the U.S. and to the Heartland specifically. Mr. Anderson talked about key partnerships. Specifically, he mentioned the outside investments in the terminal in Jerseyville, Illinois as a significant opportunity for KCS and for the region. He also discussed the significance of the automotive industry to KCS highlighting that the company will service 21 automotive plants by 2019. Safety is very important to KCS. Through partnerships with organizations such as Operation Lifesavers, they are working to reduce rail related incidents in the region.

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### **Lindsey Douglas, Director of Public Affairs, Union Pacific Railroad**

Ms. Douglas serves as the Director of Public Affairs for Union Pacific (UP) Railroad in Kansas, Missouri and Eastern Nebraska. She spoke about the importance of the Heartland to UP's operations, and noted that their headquarters are in Omaha, Nebraska. UP is the largest railroad in the Nation, operating more than 32,000 miles of track and handling over nine million carloads of freight in 2008. All of this means fantastic access to Mexico and Canada for the Central Plains/Heartland Region. Ms. Douglas explained the significance of the previously mentioned Merchant Bridge update project in St. Louis, noting the importance and benefits of public private partnerships in the region. Ms. Douglas feels that DOTs are critical partners for successful operations. When asked what the railroad industry needs from public officials, she responded that the railroads need to be included in the conversations. Good things happen when they are able to get everyone together and discuss challenges and opportunities.

### **METROPOLITAN FREIGHT ACTIVITIES, EMERGING TECHNOLOGIES, AND MULTI-JURISDICTIONAL COORDINATION**

In this session, five MPOs discussed freight planning, emerging technologies, data initiatives, and multi-jurisdictional coordination activities in their metropolitan areas. Brandon Buckner, FHWA Office of Planning, facilitated the session. Remarks made by each speaker are summarized below, followed by a summary of the Q&A session.

### **Ron Achelpohl, Director, Transportation and Environment Department, Mid-America Regional Council (MARC)**

Mr. Achelpohl welcomed everyone to Kansas City, and gave a brief overview of MARC. Freight is very important to the Kansas City area, and MARC has KC SmartPort and KC Scout to help drive economic freight activity and ITS activities in the area. The KC Logistics Park, south of the city, was opened around the same time that the economic recovery was underway. The initiative has created a unique transit issue where the park has a need for labor, but the labor force resides within the city. The challenge is developing transit options that reliably move potential workers to the park area. MARC is updating their regional transportation plan, which addresses uncertainties about changing demographics, technology, climate change, and the changing nature of globalization. Mr. Achelpohl noted the need to develop a framework policy for emerging technologies, including autonomous vehicles. He commented on other MARC activities and initiatives including potential upgrades to the aging interstate system, the implications of the FRA's Midwest rail plan, and the Hyperloop project.

### **Andrew Collings, Senior Planner, Des Moines Area MPO**

Mr. Collings presented on a shipping container locator pilot program underway in Des Moines. The program aims to connect potential shippers with information on empty/available containers in the area. The project stems from the discovery that the Des Moines area has a significant number of containers entering the area full and leaving empty. The goal of the program is to improve the efficiency of shipping in the area through the development of a website-based clearinghouse for container information. The website, containerlocator.com, provides data on where containers are available, but does not serve as a booking service. Mr. Collings explained that the data for the site identifies shipments that have cleared the border with a final destination in the Des Moines area. The pilot is intended to determine the feasibility of developing and maintaining the container locator system. A key challenge is the cost and reliability of data. As





the project moves forward, cost and reliability of date will be significant factors in the continued feasibility of the project.

#### **Phil Nelson, Director, Wichita Area MPO**

Mr. Nelson provided the group with an overview of the demographics and challenges facing the Wichita area. Wichita is facing similar trends seen across the Central Plains/Heartland Region. The population is growing at 0.4 percent per year and is aging. Approximately 40 percent of households are single occupancy and about 80 percent are soon expected to have no children. There are few single-family homes and retail establishments being built. The increase in e-commerce and reduction in brick and mortar stores is causing a reduction in tax revenue for the region. Mr. Nelson described the challenge in preparing for emerging technologies while trying to maintain the infrastructure they already have. One way to work through the challenges is to focus on becoming a smart region and capitalize on utilizing existing capacity to spur economic growth.

#### **Jim Wild, Executive Director, East-West Gateway Council of Governments (COG)**

Mr. Wild described the collaborative nature of the East-West Gateway COG, which spans two states, two Federal regions, four municipalities, and four counties. The COG has been continually looking at freight projects for the last five years. They wrapped up a freight study, which resulted in recommendations that included the development of the St. Louis Freightway, as detailed by Mr. Nations in the workshop. Mr. Wild noted that public and private partnerships face challenges with timeframes and expectations; the COG works in terms of future needs while business focus on what they need in the moment. This is a challenge but not a barrier. Mr. Wild also reported on the development of a group to assess how new technology may be considered in planning of freight facilities. The COG completed a technology study to set goals, avoid pitfalls, and become a center for innovation. The study engaged 15 local technology leaders and conducted a SWOT analysis to get a better idea of how the region was suited for technology.

#### **Greg Youell, Executive Director, Metropolitan Area Planning Agency (MAPA)**

Mr. Youell reporting on recent transportation successes in the Omaha area including the significant reduction in at-grade highway rail crossings, continued traffic growth, and economic development around the area from companies such as Facebook, Google, and Costco. MAPA is developing a preferred strategy package for roadway improvements, which is intended to be a long-term solution to infrastructure issues rather than consistent spot repairs. In total, the region needs roughly seven billion dollars in infrastructure funding while only three billion is available. He noted that while Omaha is experiencing growth, the lack of transit is a significant challenge. Opportunities like Smart Cities and the Amazon's HQ2 are excellent opportunities for public and private partnerships.



## Q&A/Dialogue

**Question for panel:** Are MPOs thinking about utilizing existing infrastructure through either downsizing, repurposing, or reusing facilities?

**Answer from Mr. Wild:** St. Louis is in preservation mode and has been for quite some time. They are focused on right size design when considering the redevelopment of major facilities.

**Answer from Mr. Youell:** While the money is not there for new capacity improvements, ballot measures with specific outputs and timelines have some promise, and people seem willing to fund them.

**Answer from Mr. Nelson:** Wichita is attempting to redirect traffic to corridors that no longer serve their original purposes due to changes in previously high traffic destinations.

**Answer from Mr. Achelpohl:** More projects in Kansas City are being geared towards active transportation.

**Answer from Mr. Collings:** Des Moines is focusing on efforts to improve efficiency, such as signal timing.

**Question for panel:** Are MPOs considering how new technology infrastructure, such as electric vehicle charging stations, will be funded?

**Answer from Mr. Achelpohl:** While the traditional methods for funding are under threat, this is an ideal time to begin considering new funding mechanisms.

**Answer from Mr. Collings:** Des Moines is looking at changes to regulations for technology such as charging stations. Currently, it is not allowable to charge users for the electricity used to charge the vehicle. Regulations like this need to be updated to allow for new funding mechanisms.

**Answer from Mr. Nelson:** Wichita is trying to be creative with tax methods, but other revenues may diminish with the implementation of emerging technologies; for example, the loss of revenue from citations that will occur once vehicles will be programmed to follow roadway laws. This is an area where they will need to collaborate with local city councils and legislators.

**Answer from Mr. Wild:** Instead of focusing on congestion pricing, we should consider fluidity pricing.

**Answer from Mr. Youell:** Nebraska has an annual fee for electric vehicles to offset the loss of fuel taxes.

**Question for panel:** Do the MPOs have regular freight dialogue through either a freight council or other forums?

**Answer from Mr. Nelson:** Wichita has a freight council that meets regularly to discuss topics such as accommodation of new freight trucks in roadway design, heavier trucks, rail crossings, and safety.



**Answer from Mr. Wild:** St. Louis does not have a freight council, but they do have the St. Louis Freightways organization, which serves in a similar capacity for area.

**Answer from Mr. Youell:** His region had a group that met once but interest waned due to the long-term timelines of planning versus the short-term needs of business.

**Answer from Mr. Achelpohl:** Kansas City has a group that focuses on freight bottlenecks, and KC SmartPort, which serves in a similar capacity as a freight round table.

## PART 3—MOVING FORWARD

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### IDENTIFYING PRIORITY NEEDS AND POTENTIAL ACTIONS FOR THE REGION

In this session, the participants focused on common needs and potential next steps to keep the conversation going. Participants broke into small groups to identify common needs across the region and brainstorm priority needs, action items, and coordination approaches. They discussed the following questions in the small groups:

- What projects or programs could be implemented or improved through multi-jurisdictional partnerships or joint activities?
- What partnerships currently exist that we can build on?
- What are the common interests and common needs discussed today?
- What are possible actions this group can address?

### REPORT OUTS AND KEEPING THE CONVERSATION GOING—DISCUSSION OF NEXT STEPS/ACTION ITEMS

Each break out group summarized their discussions and responses. Their answers are listed below by question, followed by additional comments.

What projects or programs could be implemented or improved through multi-jurisdictional partnerships or joint activity?

- Truck parking including the MAASTO TPIMS project
- Multi-state planning
- ITS (particularly along interstate system)
- Data sharing and analysis
- Autonomous vehicle preparation and deployment
- Legislative education
- Developing transportation demand models across state lines
- Truck permitting across state lines and regional boundaries
- Multi-state communication technology development and standards (i.e., broadband, fiber networks, 5G)



- MPO peer coordination around freight corridors, annual peer exchange
- Develop a multi-jurisdictional data plan
- Consider regional farm to market analysis
- Pilot an alternative revenue tied to technology. For example, an incremental fee tied to IT transactions between vehicle and provider
- Consider coordination on TIGER type funding applications and other Federal grant opportunities for multi-jurisdictional areas

What partnerships currently exist that we can build on?

- Continue freight roundtables
- Mid-American Freight Coalition (MAFC)
- Heartland Civic Collaborative (HCC)
- Mid American Association of State Transportation Officials (MAASTO)
- Midwest Interstate Passenger Rail Commission (MIPRC)
- U.S. DOT Region 7 University Research Center
- Heartland ITS
- Expand/enhance industry partnerships (agriculture industry)
- Opportunity to create a new regional group with target mission
- Clean Cities

What are the common interests and common needs discussed today?

- Improve freight movement and efficiencies
- Improve and increase coordination among all partners at all levels
- Workforce challenges, including the lack of truck drivers
- Stewardship of existing infrastructure
- Leadership to define and deploy technology consistency
- First and last mile freight challenges with current and emerging technologies
- Ensuring the Heartland stays relevant/vibrant/prosperous in the face of changing technologies and globalization
- Consistent policy for connected and autonomous vehicles
- Managing new data at state, local, and regional levels
- How to develop policies which work across local/regional/state boundaries
- Funding, specifically optimizing existing funding across the region



### What are possible actions this group can address?

- Share what has been done and invite champions join the cause
- Contact leadership to let them know what is coming
- Autonomous and connected vehicle policy consistency
- Continue communicating/meeting/working together. Consider reconvening this group in the future, or perhaps have the HCC sponsor on meeting per year
- Compete for funding opportunities for the region
- Develop consistent alternative fuel signage
- Seek opportunities to expand waterway freight movements
- Develop “Heartland Plan” (focus on common interests and joint projects)
- Consider shaping future Federal legislation
- Promote the benefits of infrastructure improvements and public/private partnerships to private sector

### **FINAL COMMENTS AND CLOSING REMARKS**

During the workshop, participants from Illinois, Iowa, Kansas, Nebraska, and Missouri discussed freight planning efforts, emerging transportation technologies, and opportunities for multijurisdictional coordination. The speakers and attendees provided key feedback and consistent themes. These include:

- Collaboration on important transportation issues is critical. Nothing happens without collaboration. Relationships are key; not only relationships between Government agencies, but also between the public, private, and academic sectors.
- New and emerging technologies bring with them unparalleled possibilities but also significant uncertainties. Working together now will allow agencies across the region to act in a uniform consistent manner as future decisions are made.
- The Central Plains/Heartland Region has significant resources and capabilities for freight expansion. Working together will help to keep the region relevant in the changing global economy.
- Participants are very interested in continued collaboration and coordination and believe it is important to keep this conversation going.

Rick Backlund, FHWA Kansas Division, Chris Herrick, Kansas DOT, and David Warm, MARC, closed out the workshop by thanking participants for their efforts and enthusiasm throughout the sessions. They commented on great discussions and connections that were made in such a short amount of time and that this workshop should serve as the basis for continued collaboration and communication.



## APPENDIX A: WORKSHOP AGENDA

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### Multi-Jurisdictional Coordination for the Central Plains/Heartland Region FHWA Workshop Agenda

KCP&L Energy Center in Partnership with Mid-America Regional Council (MARC)

1200 Main Street  
Kansas City, MO 64105  
May 16-17, 2018

#### DAY 1—Wednesday, May 16, 2018

##### Part 1—Background/Setting the Stage

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**Purpose Statement:** This workshop brings together members of the public and private sector to discuss how we can better connect and work with each other to address freight transportation and emerging technologies in the Central Plains/Heartland Region (Illinois, Iowa, Kansas, Missouri, and Nebraska) and identify next steps for doing so.

**12:30-1:00 p.m. Registration and Check In**

**1:00-1:20 p.m. Welcome and Introductions**

Introductions by: Spencer Stevens, FHWA Office of Planning  
Speakers:

- Cheryl Ball, Missouri DOT
- Kevin Ward, FHWA Missouri Division
- David Warm, Mid-America Regional Council (MARC)

**1:20-1:50 p.m. Starting the Conversation: Planning and Addressing Freight and Emerging Technologies across the Central Plains/Heartland Region**

Overview of workshop goals and open questions and answers session.

Introduction by: Spencer Stevens, FHWA Office of Planning

Speaker:

- Catherine Ross, Georgia Tech Center for Quality Growth and Regional Development (CQGRD)

**1:50-2:50 p.m. Multi-Jurisdictional Collaboration in Action: Public and Private Success Stories**

Examine past, current, and future collaboration activities to build upon.

Introductions and facilitation by: James Garland, FHWA Office of Planning

Speakers:

- Scott Smith, The Heartland Civic Collaborative (HCC)
- Davonna Moore, Multi-state Truck Parking Information Management System—Kansas DOT
- John Nations, St. Louis Regional Freightway/Bi-State Development

**2:50-3:00 p.m. BREAK**

**3:00-4:15 p.m. Private Industry Perspectives on Freight and Economic Development Needs**



Explore freight trends, market shifts, technology deployment, and challenges.

Introductions and facilitation by: Tamiko Burnell, FHWA Office of Operations and Freight Management

Speakers:

- *John Wagner*, Wagner Logistics
- *Drew Thompson*, Missouri Hyperloop Feasibility Study—Black & Veatch
- *Tony Reinhart*, Ford Motor Company

**4:15-4:50 p.m.**

**Public Private Partnerships and Managing Regional Assets**

Identifying and managing transportation assets with regional significance.

Introductions and facilitation by: David Warm, MARC

Speakers:

- *Chris Gutierrez*, KC SmartPort
- *Karyn Page*, Kansas Global Trade Services

**4:50-5:00 p.m.**

**Day One Wrap Up**

Facilitation by: Catherine Ross, Georgia Tech CQGRD

**5:00 p.m.**

**ADJOURN**

**5:30-7:30 p.m.**

**Networking Event Sponsored by the Civic Council of Greater Kansas City**

Yard House

1300 Main Street, Kansas City, MO

**DAY 2—Thursday, May 17, 2018**

**Part 2—Current and Near-Term Initiatives**

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**8:30-8:45 a.m.**

**Recap of Day 1 and Overview of Day 2**

Speaker: Spencer Stevens, FHWA Office of Planning

**8:45-10:00 a.m.**

**State DOT Perspectives on Freight, Emerging Technologies, and Regional Coordination**

Introductions and facilitation by: Spencer Stevens, FHWA Office of Planning

Speakers:

- *Jim Durako*, Illinois DOT
- *Craig Markley*, Iowa DOT
- *John Maddox*, Kansas DOT
- *Cheryl Ball*, Missouri DOT
- *Mark Fischer*, Nebraska DOT

**10:00-10:15 a.m.**

**BREAK**

**10:15-11:30 a.m.**

**Planning for Transformative Technologies**

Discussion of the future impacts of technology and the role of Connected Vehicles and Autonomous Vehicles.

Introductions and facilitation by: Brandon Buckner, FHWA Office of Planning



Speakers:

- Mike Floberg, Kansas AV Task Force/Truck Platooning—Kansas DOT
- Cheryl Ball, I-70 Corridor—Missouri DOT
- Mike Grigsby, Avis Connected Vehicle Pilot—Kansas City Area Transportation Authority

**11:30-1:00 p.m. WORKING LUNCH—The Future of the Heartland in North American Freight Movement**

Introductions by: James Garland, FHWA Office of Planning

Moderated by: Scott Smith, Heartland Civic Collaborative

Speakers:

- Kelley Anderson, Kansas City Southern Railway
- Lindsey Douglas, Union Pacific

**1:00-2:30 p.m. Metropolitan and Rural Freight Activities, Emerging Technologies, and Multi-Jurisdictional Coordination**

Introductions and facilitation by: Brandon Buckner, FHWA Office of Planning

Speakers:

- Ron Achelpohl, MARC
- Andrew Collings, Des Moines Area MPO
- Phil Nelson, Wichita Area MPO
- Jim Wild, East West Gateway COG
- Greg Youell, Metropolitan Area Planning Agency

**2:30-2:45 p.m. BREAK**

**Part 3—Moving Forward**

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**2:45-3:45 p.m. Identifying Priority Needs and Potential Actions for the Region**

Break out groups discuss common needs across the region and brainstorm priorities and coordination approaches. Discussion questions include:

- What are the common interests and needs discussed today?
- What partnerships currently exist that we can build on?
- What projects or programs could be implemented or improved through multi-jurisdictional partnerships?
- What action items and next steps should this group take?

**3:45-4:15 p.m. Report Outs and Keeping the Conversation Going—Discussion of Next Steps/Action Items**

Develop concrete action items to carry forward.

Facilitation by: Catherine Ross, Georgia Tech CQGRD, and James Garland, FHWA Office of Planning

**4:15-4:30 p.m. Closing Remarks**

Introductions by: James Garland, FHWA Office of Planning

- Rick Backlund, FHWA Kansas Division
- Chris Herrick, Kansas DOT
- David Warm, Mid-America Regional Council

**4:30 p.m. ADJOURN**





## **APPENDIX B: CENTRAL PLAINS/HEARTLANDS REGION WHITE PAPER**

The Central Plains/Heartland Region White Paper is included in the following pages.



Photo Source: Getty Images

# Multi-Jurisdictional Coordination for the **Central Plains/ Heartland Region**



U.S. Department of Transportation  
**Federal Highway Administration**



# Central Plains/Heartland Region

May 2018

## INTRODUCTION

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This paper provides an overview of the Central Plains/Heartland Region and highlights key characteristics, including population, employment, transportation infrastructure, freight trends, challenges, and opportunities. For the purposes of this paper, the Central Plains/Heartland Region includes central and southern Illinois (IL), Iowa (IA), Kansas (KS), Missouri (MO), and Nebraska (NE). The economic activity of the Central Plains/Heartland Region centers on several metropolitan areas that serve as transportation and economic hubs. These metropolitan areas are served by 34 Metropolitan Planning Organizations (MPO), eight of which are multi-state MPOs.<sup>1</sup> These MPOs serve populations ranging in size from 2.6 million (East-West Gateway Council of Governments in St. Louis) to 53,000 (Grand Island Area MPO in Nebraska).

Major cities located in the region include St. Louis, Kansas City, Omaha, Wichita, and Des Moines. Table 1 presents the gross domestic product (GDP) for each of the five states and the gross metropolitan product (GMP) for the five largest metropolitan statistical areas (MSA). For Illinois, GMP is considered for the central and southern part of the state only and therefore does not include the Chicago region.

The St. Louis, MO-IL MSA is the 21<sup>st</sup> largest metropolitan area in the United States (U.S.) in terms of GDP, with about half of its economy and employment represented by the health, education, financial, and business services sectors.<sup>2,3</sup> The Kansas City, KS-MO MSA has the 30<sup>th</sup> largest GDP in the Nation, with much of its economy driven by growing manufacturing activity, including more than \$1.5 billion in new investments by automakers Ford Motor Company and General Motors. Omaha is a major U.S. center for banking, insurance, and telecommunications, as well as agricultural manufacturing. The Des Moines region is a finance and insurance sector hub, with additional key industries including data centers, agribusiness and bioscience, advanced manufacturing, and logistics. Major industries in the Wichita region include aviation, health care, and manufacturing.

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<sup>1</sup> U.S. DOT (2017). Transportation Planning Capacity Building. This includes all MPOs in IL except for CMAP. Retrieved from <https://www.planning.dot.gov/mpos1.asp>.

<sup>2</sup> U.S. Department of Commerce, Bureau of Economic Analysis, 2015.

<sup>3</sup> St. Louis Regional Chamber, <http://www.stlregionalchamber.com/regional-data/economy>.



Table 1: GDP for each State and GMP for the Largest MSA in each State in the Central Plains/Heartland Region, 2015

State	2015 GDP (million \$)	Share	Largest MSAs in Heartland Region	2015 GMP (million \$)	Share
Illinois	777,243	4.32%	St. Louis, MO-IL	156,215	0.96%
Iowa	180,440	1.00%	Kansas City, KS-MO	125,985	0.77%
Kansas	151,314	0.84%	Omaha-Council Bluffs, NE-IA	59,673	0.37%
Missouri	293,373	1.63%	Des Moines-West Des Moines, IA	48,243	0.30%
Nebraska	115,720	0.64%	Wichita, KS	32,109	0.20%
<b>U.S. Total</b>	<b>18,007,085</b>	<b>100%</b>	<b>U.S. Total</b>	<b>16,280,446</b>	<b>100%</b>

Source: U.S. Department of Commerce, Bureau of Economic Analysis.

Table 2 presents total vehicle miles traveled (VMT) and VMT per capita in each of the five states of the Central Plains/Heartland Region and for the Nation. Together, the five states account for 8.4 percent of total national VMT. Four of the five states, Iowa, Kansas, Missouri, and Nebraska, each have higher VMT per capita than the national average. The below-average VMT per capita in Illinois results in part from the higher mode shares of transit and active travel modes in the northern portions of the state, particularly in the Chicago metropolitan area. The Central Plains/Heartland Region's heavy reliance on automobiles calls for continuing efforts to build and maintain sustainable and resilient transportation infrastructure. This automobile reliance also reflects a need to encourage alternative travel modes in the region.

Table 2: Total VMT and VMT per capita by State in the Central Plains/Heartland Region in 2016

State	Total VMT (millions)	National VMT Share	State Population	VMT per capita
Illinois <sup>1</sup>	107,314	3.38%	12,801,539	8,383
Iowa	33,337	1.05%	3,134,693	10,635
Kansas	32,103	1.01%	2,907,289	11,042
Missouri	74,109	2.33%	6,093,000	12,163
Nebraska	20,700	0.65%	1,907,116	10,854
Central Plains/Heartland Region, total	267,563	8.43%	26,843,637	9,967
<b>United States, total</b>	<b>3,174,408</b>	<b>100%</b>	<b>323,127,513</b>	<b>9,824</b>

Source: Bureau of Transportation Statistics.

<sup>1</sup> The data for Illinois includes northern portions of the state, while the Region as defined in this paper includes only central and southern Illinois.

## IMPORTANCE OF MULTI-JURISDICTIONAL COORDINATION

Regional Economic Partnerships are networks of urban centers and their surrounding areas connected by existing economic, social, and infrastructure relationships.<sup>4</sup> In an increasingly competitive global economy, it is critical to understand these economic ties and the transportation infrastructure that provides access to customers and markets. To better understand the impact of these regions and to facilitate cooperation and coordination accordingly, the Federal Highway Administration (FHWA) is sponsoring several workshops across the country. These workshops convene local, regional, state, and Federal transportation officials with the private sector to connect and discuss multimodal freight transportation, infrastructure investment, operations, and

<sup>4</sup> Ross, C. L. et al. (2009). *Megaregions: Planning for global competitiveness*. Island Press.



corresponding shared economic success at the broad regional scale. The importance of this collaborative effort is underscored by the significance of these regions both nationally and globally. Regional Economic Partnerships are economic engines and major travel origins and destinations.

The state, regional, and local jurisdictions in the Central Plains/Heartland Region comprise an economic network. Economic competitiveness is a key motivation for pursuing a multi-jurisdictional approach to planning. The economic theory of agglomeration posits that organizations locate and invest in areas that allow them to take advantage of amenities within a particular region. Examples of these amenities include a specialized labor force, robust infrastructure, and an array of research and development institutions. Research suggests that clustering of industries and the ability to make large-scale investments helps these connected regions become more economically competitive and resilient than individual cities or regions.

Viewed through this lens, states and metropolitan areas with economic ties are stronger if they function as a region rather than as independent units. This involves coordinated planning and decision-making across boundaries, and is the key justification for building ties among neighboring states and regions. In an increasingly competitive global economy, it is critical to understand these economic ties and the importance of transportation infrastructure that serves as the link within and between regions to provide connections across the U.S. and beyond.

Transportation infrastructure provides mobility within and between these connected areas in the Central Plains/Heartland Region and is the means for the movement of goods beyond the Region. The Region's ports, highways, railroads, airports, pipelines and intermodal connections will need continued investment to transport agricultural products, manufactured goods, and raw materials to their final destinations. Coordinated, comprehensive transportation planning activities are necessary to ensure that the region can effectively compete in the global economy.

## POPULATION

The total population of the five states that span the Central Plains/Heartland Region was approximately 26.8 million people in 2016 (8.4 percent of the U.S. population).<sup>5</sup> Illinois is the most populous state, followed by Missouri, Iowa, Kansas, and Nebraska, as shown in Figure 1 and Table 3. The five states in the region have experienced slower growth between 2010 and 2016 than the Nation as a whole, with the population of Illinois declining slightly and Nebraska almost keeping pace with the U.S. growth rate.<sup>6</sup> Population projections to 2040 show this trend continuing, with a decrease of 1.0 percent from 2010 levels for Illinois and increases of 12.8 percent for Iowa, 9.7 percent for Kansas, 6.8 percent for Missouri, and 21.0 percent for Nebraska, compared to 24.1 percent for the U.S. as a whole.<sup>7</sup>

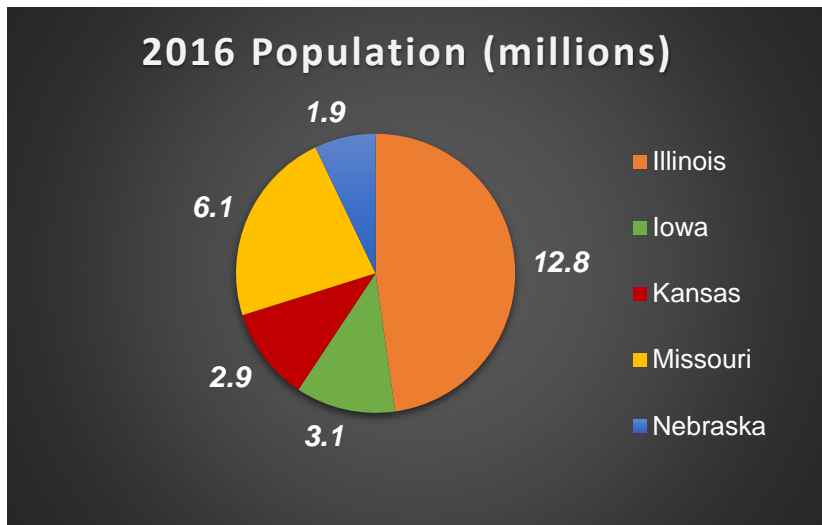
<sup>5</sup> U.S. Census, 2015.

<sup>6</sup> U.S. Census, Annual Estimates of the Resident Population of the U.S., April 1, 2010 to July 1, 2016.

<sup>7</sup> University of Virginia Demographics Research Group, *National Population Projections*.  
<http://demographics.coopercenter.org/national-population-projections/>



Figure 1: Population by State in the Central Plains/Heartland Region, 2016



Source: U.S. Census Bureau.

Table 3: State Growth Rates in the Central Plains/Heartland, 2010 to 2016

State	Total Population 2010	Total Population 2016	Population Growth Rate, 2010–2016
Illinois	12,841,578	12,801,539	-0.31%
Iowa	3,050,738	3,134,693	2.75%
Kansas	2,858,850	2,907,289	1.69%
Missouri	5,996,118	6,093,000	1.62%
Nebraska	1,830,051	1,907,116	4.21%
Central Plains/Heartland Region, total	26,577,335	26,843,637	1.01%
United States, total	309,348,193	323,127,513	4.45%

Source: U.S. Census, Annual Estimates of the Resident Population of the U.S., April 1, 2010 to July 1, 2016.

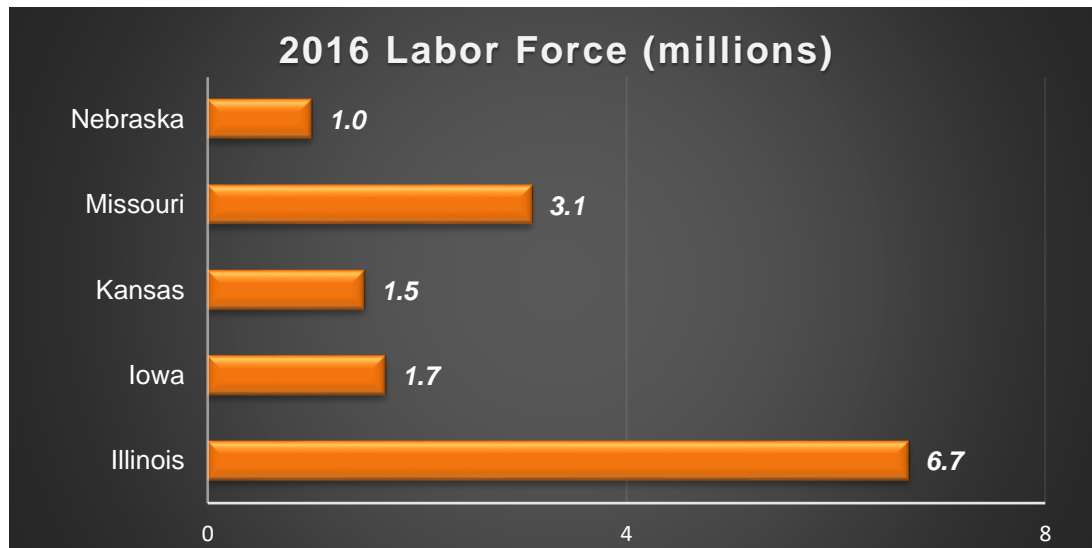
<sup>1</sup> The data for Illinois includes northern portions of the state, while the Region as defined in this paper includes only central and southern Illinois.

## EMPLOYMENT

The region’s largest employment sectors include agriculture and biotechnology, manufacturing, insurance and financial services, and logistics. The healthcare, retail, construction, data center, food processing, and oil and gas extraction sectors also contribute to the region’s economy. Many of the rural areas of the region have seen declines in population as well as jobs, particularly in farming and oil and gas extraction. Labor force data for each state is shown in Figure 2.



Figure 2: Labor Force by State in the Central Plains/Heartland Region in 2016



Source: American Community Survey 5-year Estimate, 2012-2016.

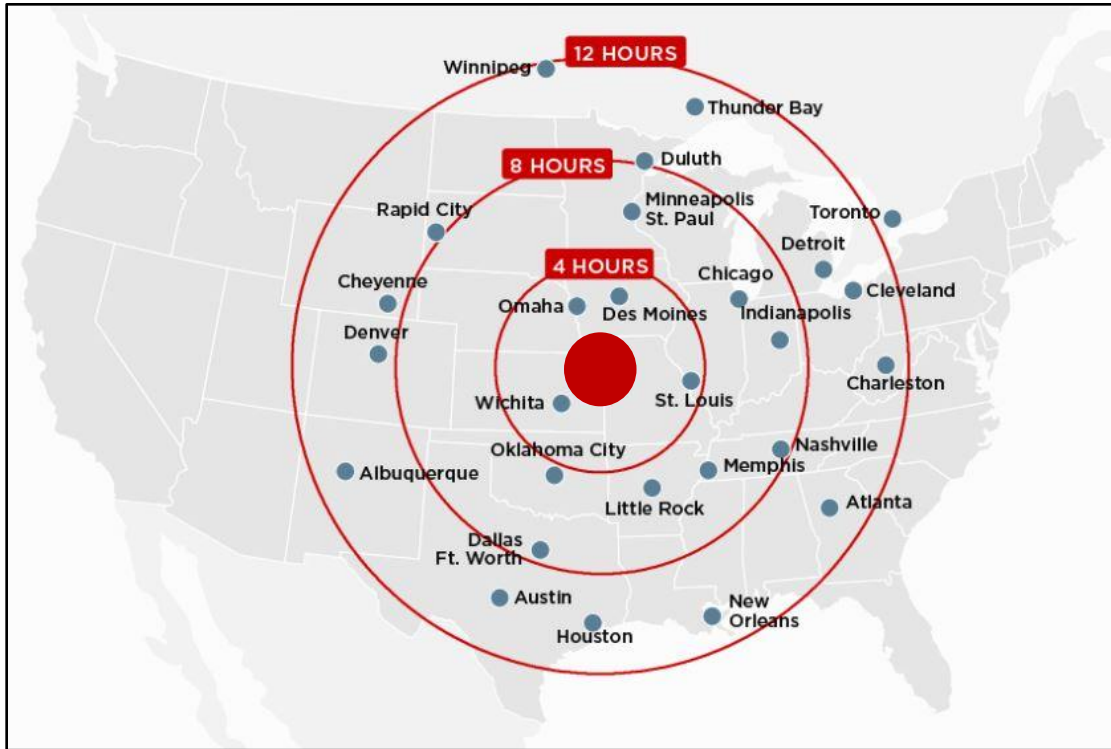
### CENTRAL PLAINS/HEARTLAND REGION INFRASTRUCTURE

The Central Plains/Heartland Region has a large and developed network of freight and passenger transportation infrastructure across all modes. As shown in Figure 3, the Region’s location in the center of the country puts residents and businesses within a short travel distance of major population centers. This location makes the region attractive to e-commerce providers; 85 percent of the U.S. population can be reached from the region within two days or less.<sup>8</sup> Figure 4 summarizes key interstate, railroad, commercial airport, and waterborne transportation facilities. Each mode is discussed in more detail in the following sections.

<sup>8</sup> Kansas City Area Development Council.



Figure 3: Distance and Travel Time to Major Metropolitan Areas from the Central Plains/Heartland Region



Source: Kansas City Area Development Council.

Figure 4: Key Central Plains/Heartland Region Transportation Facilities

<b>Interstates</b>	I-24, I-29, I-35, I-39, I-44, I-49, I-55, I-57, I-64, I-70, I-72, I-74, I-80, I-88 (Auxiliary Interstates omitted)
<b>Railroads</b>	Burlington Northern Santa Fe (BNSF), Canadian National (CN), CSX Transport (CSX), Iowa Interstate, Kansas City Southern (KCS), Norfolk Southern (NS), Union Pacific (UP) Intercity Passenger: Amtrak
<b>Commercial Airports</b>	BLV, BMI, DSM, ICT, LBF, LNK, MCI, MLI, OMA, PIA, SGF, STL
<b>Waterborne</b>	America’s Central Port, Caruthersville Harbor, Howard/Cooper County Port, Kaskaskia River Port Districts, Pemiscot County Port, Port of Beardstown, Port of Davenport, Port of Dubuque, Port of Granite City, Port of Hannibal, Port of Keokuk, Port of Mississippi County, Port of Peoria, Port of Quincy, Port of Rock Island, Port of St. Joseph, Port of St. Louis and East St. Louis, Port of Kansas City, Port of New Madrid County, Southeast Missouri Port

### Major Transportation Freight Flows

To support projected population and economic growth, freight movements across all modes in the U.S. are expected to grow by roughly 42 percent by the year 2040.<sup>9</sup> This steady growth is the result of the national economic trajectory, an increase in U.S. international merchandise trade, improvements in freight sector productivity, and the availability of an extensive multimodal

<sup>9</sup> National Freight Strategy Framework, [https://ops.fhwa.dot.gov/freight/pol\\_plng\\_finance/policy/documents/nfsf/ssc3.htm](https://ops.fhwa.dot.gov/freight/pol_plng_finance/policy/documents/nfsf/ssc3.htm).





transportation network. With this increase, it is critical that rail and roadway connectivity be maintained and enhanced, and that the system remain in a state of good repair as infrastructure ages.

Freight movement in the Central Plains/Heartland Region is facilitated by all transportation modes. Table 4 displays total freight tonnage by mode for each state in the region, totaling approximately 4.45 million kilotons. The highest volume of all freight is transported through Illinois (40.3 percent), followed by Iowa (19.1 percent), Missouri (14.5 percent), Kansas (13.6 percent), and Nebraska (12.5 percent), as depicted in Figure 5.

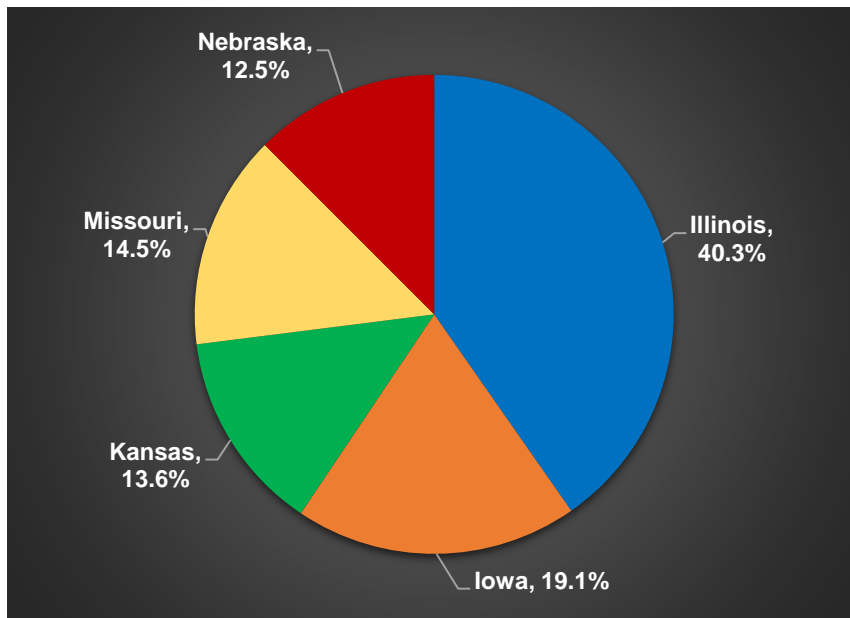
Table 4: Central Plains/Heartland Region Statewide Freight Tonnage (in kilotons, 2015)

	Truck	Rail	Water	Air	Other	Total
<b>Illinois</b>	1,097,507	274,234	35,180	1,244	386,955	1,795,121
<b>Iowa</b>	639,325	93,960	4,509	98	115,494	853,385
<b>Kansas</b>	412,695	59,936	9	87	133,443	606,170
<b>Missouri</b>	440,336	73,652	21,495	116	109,631	645,230
<b>Nebraska</b>	362,232	95,560	—	37	99,532	557,361
<b>Total</b>	2,952,095	597,342	61,193	1,582	845,055	4,457,268

Note: Other includes multiple modes, pipelines, and “movements not elsewhere classified such as flyaway aircraft, and shipments for which the mode cannot be determined.”<sup>10</sup>

Source: Freight Analysis Framework version 4 (FAF4).

Figure 5: Percentage of Total Freight Volume by State in 2015



Source: Freight Analysis Framework version 4 (FAF4).

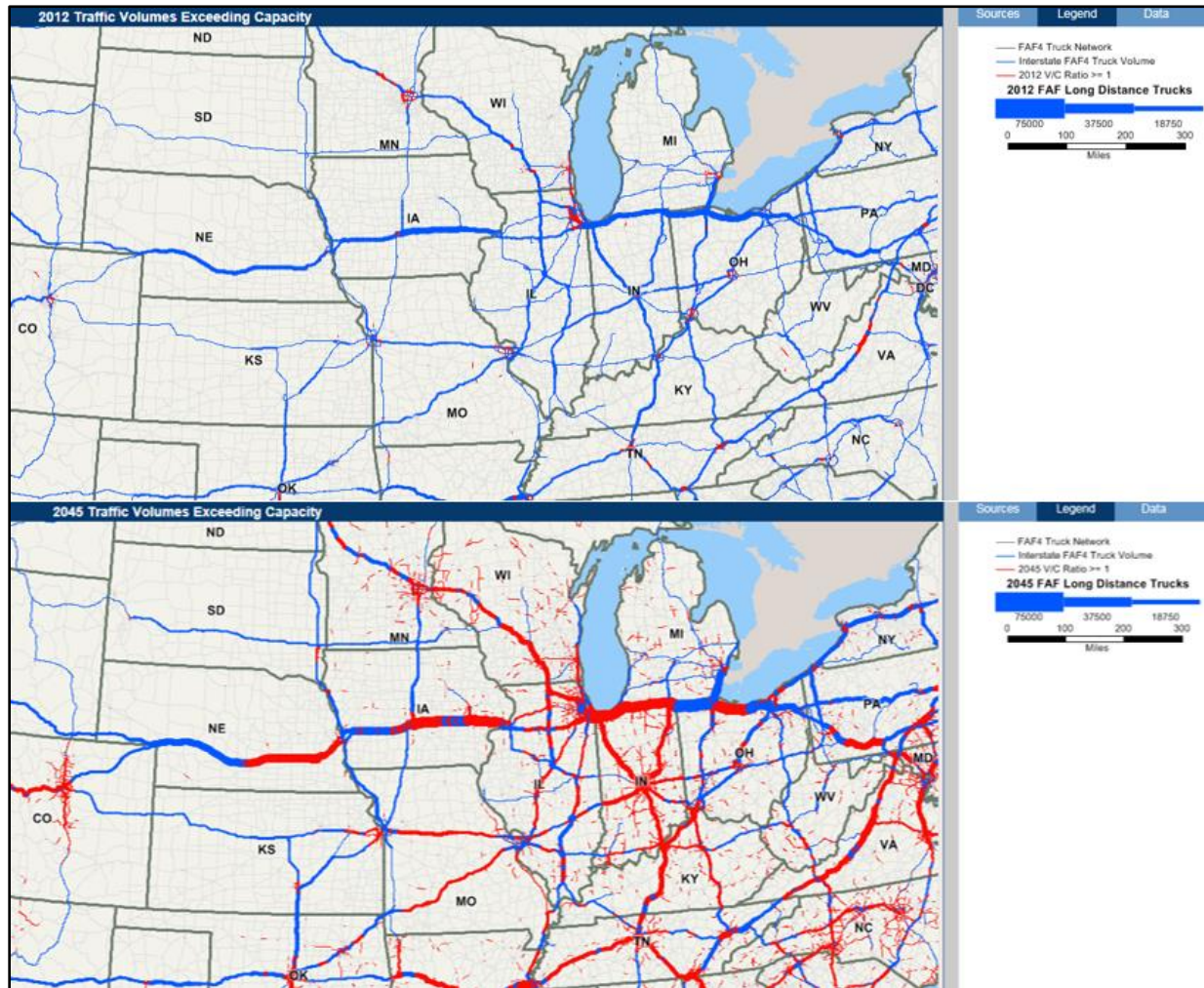
Figure 6 presents 2012 and 2045 forecasted truck volumes in the Central Plains/Heartland Region and neighboring states. Between 2012 and 2045, congested conditions (shown in red)

<sup>10</sup> Bureau of Transportation Statistics. “Freight Analysis Framework Version 4 User’s Guide for Release 4.0.” Retrieved from <https://faf.orl.gov/fafweb/data/FAF4%20User%20Guide.pdf>.



are forecast to increase significantly, especially in Iowa and Missouri as well as states to the north and east of the region.

Figure 6: Central Plains/Heartland Region Truck Volumes, 2012 and 2045 Forecast



Source: Freight Analysis Framework version 4 (average annual daily truck traffic).

At the national level, six trends and challenges have been identified in the National Freight Strategic Plan (NFSP) developed by U.S. Department of Transportation (U.S. DOT).<sup>11</sup> These trends guide U.S. DOT's interest and efforts to help improve freight nationally. The trends include (1) expected growth in freight tonnage; (2) underinvestment in the freight system; (3) difficulty in planning and implementing freight projects; (4) continued need to address safety, security, and resilience; (5) increased global economic competition; and (6) the application and deployment of new technologies. Many of these trends also are present in the Central Plains/Heartland Region and can help guide efforts to improve freight systems in the region.

The Fixing America's Surface Transportation (FAST) Act provided new tools to address freight challenges. The FAST Act establishes a new National Highway Freight Program (NHFP) with the goal of improving freight movement efficiency on the National Highway Freight Network (NHFN).<sup>12</sup>

<sup>11</sup> U.S. DOT (2015). National Freight Strategic Plan. Retrieved from <https://www.transportation.gov/freight/NFSP>.

<sup>12</sup> National Highway Freight Program: <https://www.fhwa.dot.gov/fastact/factsheets/nhfpfs.cfm>.



The FAST Act creates a national policy with specific goals about the freight network's condition, safety, security, efficiency, productivity, resiliency, and reliability. To receive funding under the NHFP, a State must develop a comprehensive freight plan that identifies freight planning activities, covers a five-year forecast period, includes a fiscally constrained "freight investment plan" with a list of priority projects, and describes how the State will invest and match its NHFP funds. NHFP funds can be used for a wide range of activities and projects that cover freight planning, analysis, and forecasting, infrastructure construction and rehabilitation, intelligent transportation system and technology deployment and so on. The Infrastructure for Rebuilding America (INFRA) discretionary grant program (previously called FASTLANE) also provides funds to repair aging infrastructure, with 25 percent of funds reserved for rural projects.<sup>13</sup>

The Central Plains/Heartland Region is home to several manufacturing facilities and has experienced a healthy level of growth in manufacturing. Kansas City was recently ranked fourth among metropolitan areas where manufacturing has been thriving.<sup>14</sup> In Central Iowa, business and civic leaders established the Cultivation Corridor to support the region's strong agribusiness and biotechnology industry. More than 1,250 agro-science companies are established in Iowa. The Des Moines area also is the sight of a new \$1.4 billion Apple data center that will be completed in 2020.

## Highways

The Central Plains/Heartland Region is served by numerous Interstate Highways, state highways, and U.S. routes, which provide direct connections for passengers and goods to metropolitan areas within the region as well as outside the region. There are approximately 5,700 centerline miles of Interstate in the region's five states, which is 12 percent of the total U.S. Interstate system. There are 38,751 miles of state highways and U.S. routes.<sup>15</sup> The highways connect the 34 MPO areas, where much of the region's economic activity takes place. Figure 7 depicts the National Highway System (NHS) network in the region.

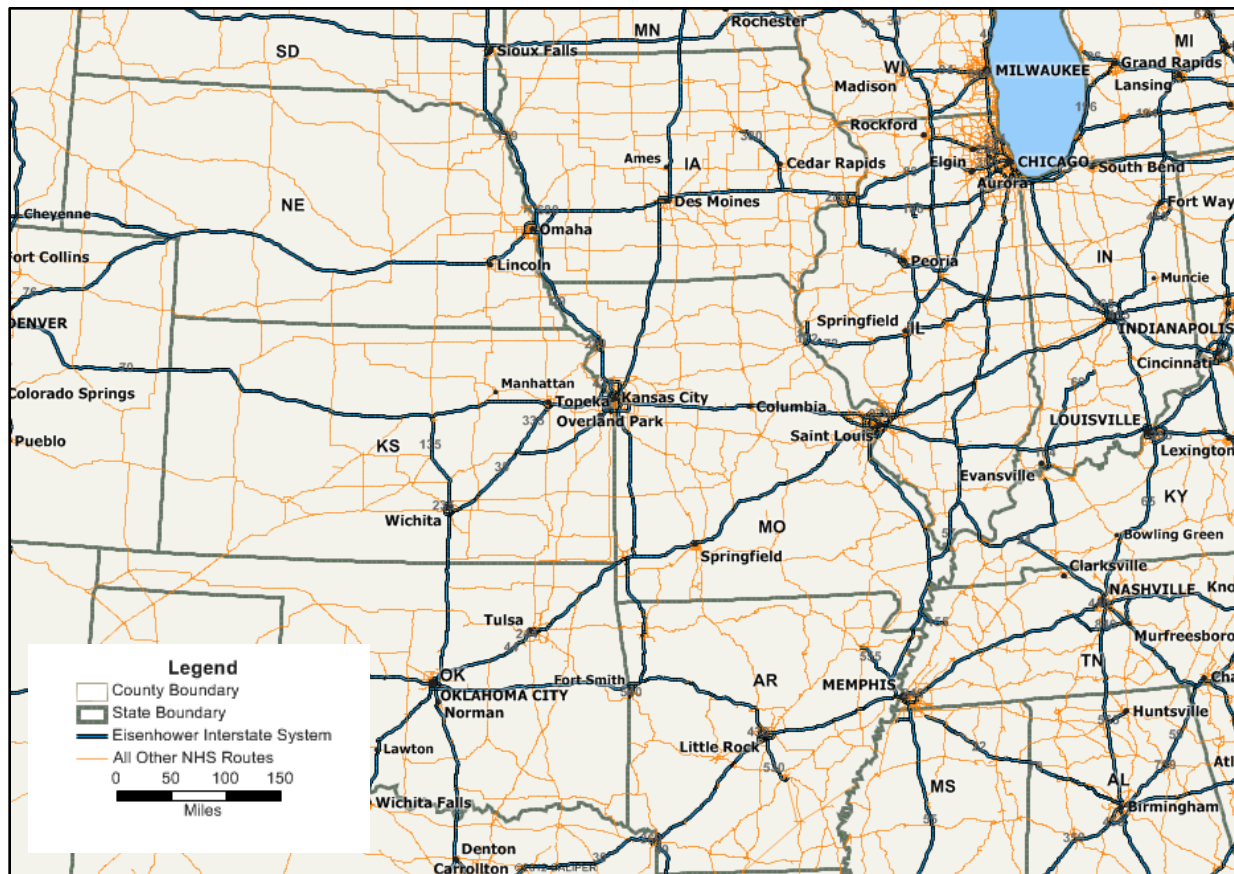
<sup>13</sup> U.S. DOT (2017). Retrieved from <https://www.transportation.gov/buildamerica/infragrants>.

<sup>14</sup> Forbes. The U.S. Cities where Manufacturing is Thriving. February 2018.

<sup>15</sup> FHWA Office of Highway Policy Information, Highway Statistics 2015.



Figure 7: Central Plains/Heartland Region National Highway System Routes



Source: Federal Highway Administration (2018).<sup>16</sup>

The region does not experience levels of congestion as high as many other parts of the U.S. However, congestion on the region’s roads accounts for approximately 209 million annual vehicle-hours of delay, of which 72 percent occurs in the four most congested metro areas: St. Louis, Kansas City, Omaha, and Wichita. Congestion in the region is responsible for at least 98 million gallons of excess fuel burn, which roughly equates to an extra 1.9 billion pounds of CO<sub>2</sub> released annually.<sup>17,18</sup>

### Railroads

Railroads provide connectivity for passengers and freight movement across the country, linking cities with ports and providing connections for barge traffic along the Inland Waterway System (IWS). Amtrak serves as the primary passenger rail service across the region, with routes operating in each of the five states and stops in numerous cities. Many of the Amtrak routes crossing the region originate or end in Chicago, and connect to various cities on both coasts as well as southern states.

The Central Plains/Heartland Region is served by all seven American and Canadian Class I freight railroads, which are Burlington Northern Santa Fe (BNSF), Canadian National (CN),

<sup>16</sup> Retrieved from <https://hepgis.fhwa.dot.gov/fhwagis/#>.

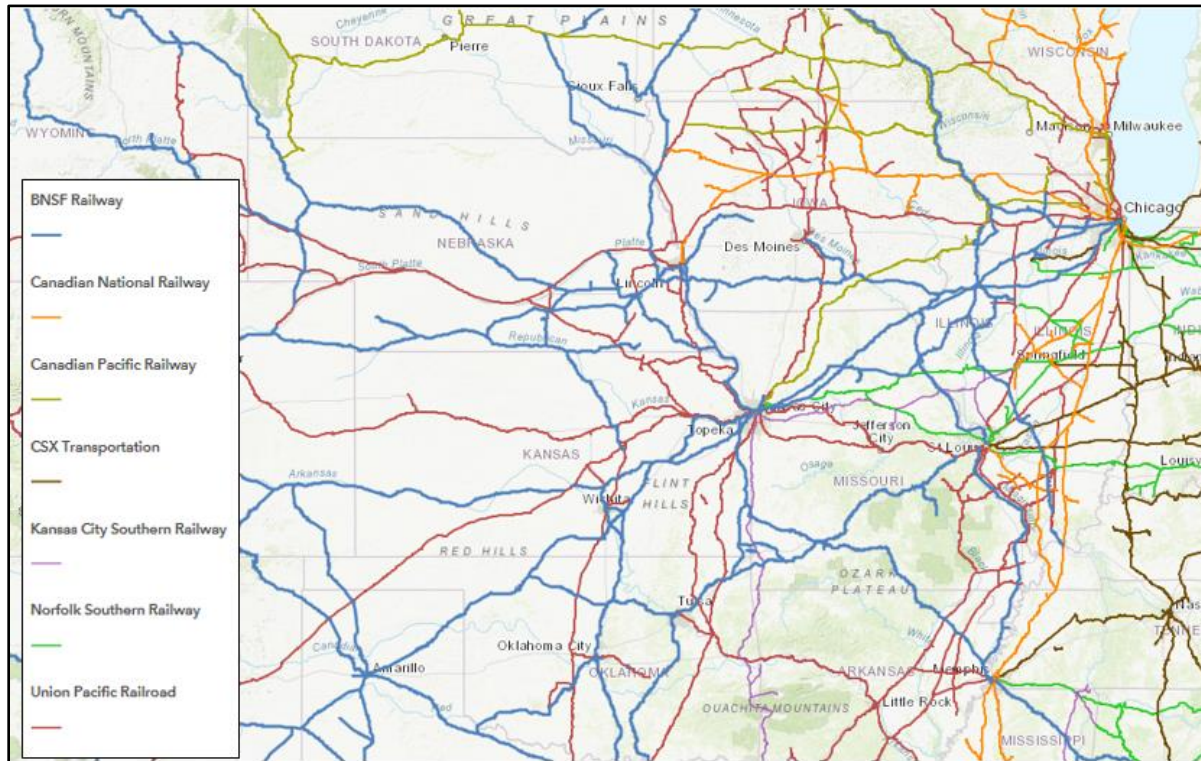
<sup>17</sup> Texas A&M Transportation Institute (2015). Annual Urban Mobility Scorecard. Retrieved from <https://mobility.tamu.edu/ums/>.

<sup>18</sup> EPA (2017). Greenhouse Gases Equivalencies Calculator. Retrieved from <https://www.epa.gov/energy/greenhouse-gases-equivalencies-calculator-calculations-and-references>.



Canadian Pacific (CPRS), CSX Transportation (CSXT), Norfolk Southern (NS), Union Pacific (UP), and Kansas City Southern (KSC). Rail routes throughout the region provide connectivity to major hubs along a larger freight rail network that extends from Florida to Maine, northwest and northeast into Canada, west beyond the Mississippi River, and east to Baltimore and other locations on the east coast. Figure 8 depicts the Class 1 railroad network in the region. Many of the goods consumed by metropolitan areas in the region, as well as throughout the Nation, are supplied by the surrounding rural regions or pass through this region. The Nation’s economy depends on these reliable freight transportation connections to link businesses with suppliers and markets here and around the world.

Figure 8: Class 1 Railroads in the Central Plains/Heartland Region



Source: U.S. Bureau of Transportation Statistics (2015).

Intermodalism is one of the fastest growing segments of the rail industry. Manufacturers and suppliers increasingly rely on “just-in-time” delivery of goods, and intermodal rail service is suited to meet this demand. The region contains numerous rail intermodal centers that allow for goods transfer between modes. For example, Logistics Park Kansas City (LPKC) is a new, 1,700-acre master-planned distribution and warehouse development located just southwest of downtown Kansas City. LPKC is served by BNSF and designed with capacity for 17 million square feet of industrial buildings. It has 64,000 feet of rail track and space to accommodate 4,300 and 1,800 trucks. The Iowa DOT received a \$25.65 million Fostering Advancement in Shipping and Transportation for the Long-term Achievement of National Efficiencies (FASTLANE) grant to build an intermodal transportation facility in Cedar Rapids. The facility will include a container intermodal terminal, a rail-to-truck transload facility, and capability to consolidate and redistribute truck loads and loading/unloading of containers. Additional funding is being provided by the private sector.



### Inland Waterways and Ports

The U.S. inland waterways system includes approximately 12,000 miles of commercially navigable water channels that move commerce to and from 38 states. These waterways enhance the Nation’s surface transportation system in several ways: reducing maintenance costs from wear and tear on roads and bridges; provide additional freight and passenger transportation capacity; often use less energy per ton-mile of freight moved; provide alternatives for the movement of hazardous materials outside heavily populated areas; and increase transportation system resiliency and redundancy by providing transportation alternatives during times of disaster or national emergency.<sup>19</sup> The U.S. Department of Transportation has designated 24 all-water Marine Highway Routes. Figure 9 shows the designated Marine Highway Routes for the eastern half of the U.S. including those serving the Central Plains/Heartland Region.

Many parts of the region have access to the inland waterway system. Large parts of the borders of Illinois, Iowa, and Missouri lie along the Mississippi River, providing thousands of miles of navigable waterways for freight movement. The Missouri River lies at the western border of Iowa and passes through Kansas City and on to St. Louis. Commodities travel to and from the region via these waterway links, including food, chemicals, wood products, coal, scrap metal, fertilizers, petroleum, and manufactured goods. These waterways provide the state with connections to both the Atlantic Ocean through the St. Lawrence Seaway and the Great Lakes and the Gulf of Mexico via the Mississippi River. Key truck and rail corridors along these Marine Highway Corridors experience congestion and bottlenecks. Increased use of the waterways can remove barriers to efficient freight transportation and has the potential to alleviate a portion of the truck and rail congestion. Over the past several decades, a network of federally owned locks and dams constructed and operated by the U.S. Army Corps of Engineers have enabled freight movement along the waterway system. In recent years, many of these facilities have reached or exceeded their designed life cycle. Thus, rehabilitation and modernization of the waterways is increasingly important to maintain the viability of the waterway routes.

Table 5 shows the major ports in the region and the commodity tonnage handled by each port. Within the region, major portions are located only in Missouri and Illinois. The Port of St. Louis is the busiest port by tonnage, followed by the Port of Kaskaskia. Table 6 lists other ports in the region that are not defined as major by the U.S. Army Corps of Engineers.

Table 5: Major Ports in the Central Plains/Heartland Region

Port Name	State	2016 Tonnage
Port of St. Louis	Missouri/Illinois	32,150,906
Port of Kaskaskia	Illinois	5,750,588
Port of New Madrid County	Missouri	2,182,046
Southeast Missouri Port	Missouri	1,179,791
Port of Kansas City	Missouri	1,517,347

Source: National Transportation Atlas Database.<sup>20</sup>

<sup>19</sup> U.S. DOT Maritime Administration, *America’s Marine Highway Program*. <https://www.marad.dot.gov/ships-and-shipping/dot-maritime-administration-americas-marine-highway-program/>

<sup>20</sup> Retrieved from <https://catalog.data.gov/dataset/major-ports-national>



Table 6: Additional Ports in the Central Plains/Heartland Region

Port Name	State	Port Name	State
Port of Beardstown	Illinois	Port of Mississippi County	Missouri
Port of Granite City	Illinois	Port of Hannibal	Missouri
Port of Peoria	Illinois	Port of St. Joseph	Missouri
Port of Quincy	Illinois	Port of Burlington	Iowa
Port of Rock Island	Illinois	Port of Dubuque	Iowa
Howard/Cooper County Port	Missouri	Port of Davenport	Iowa
Pemiscot County Port	Missouri	Port of Keokuk	Iowa

Figure 9: Marine Highway Routes Serving the Central Plains/Heartland Region



Source: U.S. DOT Maritime Administration.

### Airports

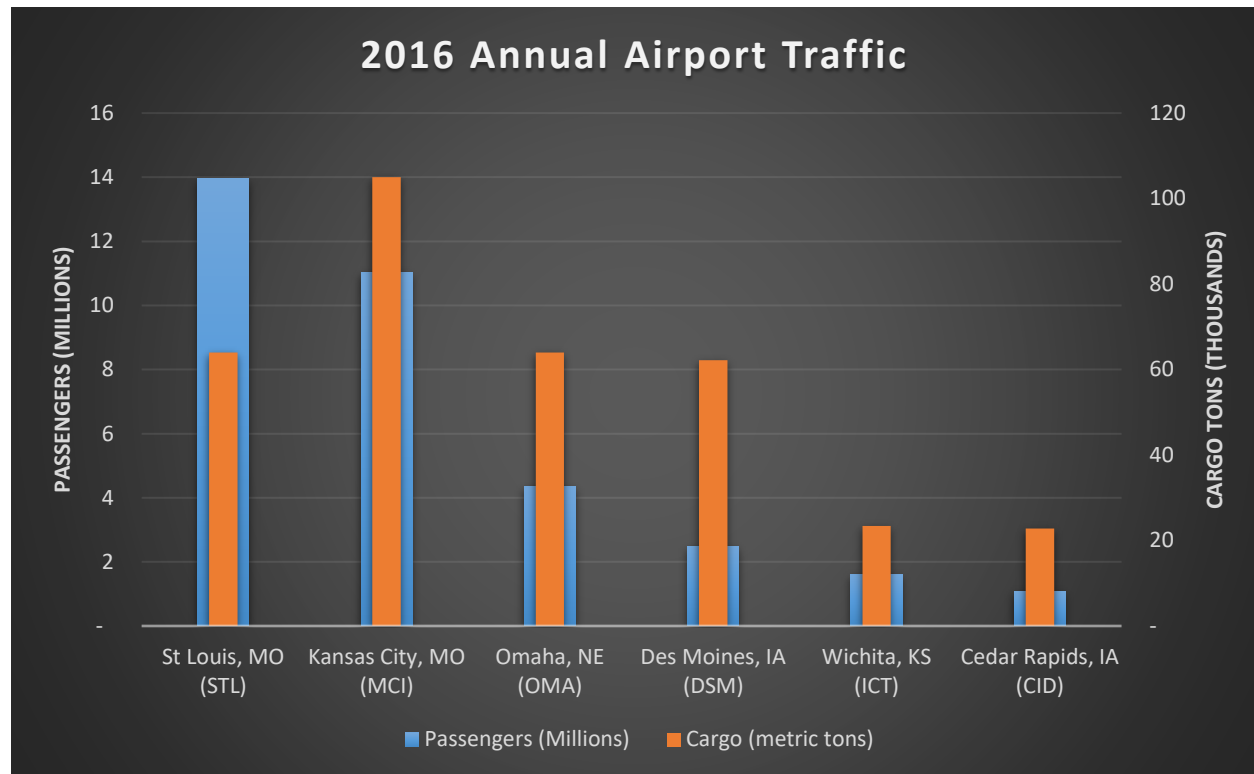
The region has several airports serving large cargo and passenger volumes. Nationwide, the amount of cargo moved by air is much lower than that moved by surface modes. However, the value of cargo moved by air tends to be generally much higher per unit since the goods that move by air tend to be very time-sensitive or high-value items, such as electronics or pharmaceuticals.

The largest airports in the region are St. Louis Lambert International (STL), Kansas City International (MCI), Eppley Airfield in Omaha (OMA), Des Moines International (DSM), Wichita



Dwight D. Eisenhower (ICT), and Eastern Iowa Airport in Cedar Rapids (CID).<sup>21</sup> Figure 10 summarizes the passenger and cargo traffic at these six airports. MCI processes the largest cargo volume, followed by OMA and STL. Cargo volume at MCI increased by 10.5 percent from 2015 to 2016, making it the 40<sup>th</sup> busiest cargo airport in North America in 2016. Cargo volume also increased by 18 percent and 12 percent at OMA and STL during the same period. STL has the highest passenger volume in the region; the airport is the 36<sup>th</sup> largest passenger airport in North America, with the number of passengers growing by 9.5 percent from 2015 to 2016.

Figure 10: Central Plains/Heartland Region Major Airports Annual Traffic in 2016



Source: Airports Council International—North America (2016).<sup>22</sup>

### CENTRAL PLAINS/HEARTLAND REGION CHALLENGES

A number of infrastructure challenges across modes have been identified.

**Safety:** Transportation agencies’ greatest priority is safety, a goal to which they commit significant resources. Since 1975, national motor vehicle fatality rates have been reduced by 50 percent even as VMT has climbed, reflecting great success on the part of transportation agencies and vehicle manufacturers.<sup>23</sup> Nonetheless, injuries and fatalities still occur. Table 7 presents 2016 motor vehicle crash death rates for each state in the region and for the U.S.

<sup>21</sup> Airports Council International. 2016 North America Airport Rankings. <http://www.aci-na.org/north-america-airport-rankings>.

<sup>22</sup> Retrieved from <http://www.aci-na.org/content/airport-traffic-reports>.

<sup>23</sup> IIHS (2015). General statistics. Retrieved from <http://www.iihs.org/iihs/topics/t/general-statistics/fatalityfacts/overview-of-fatality-facts>.





Illinois and Nebraska have motor vehicle fatality rates below the national average, while Iowa, Kansas, and Missouri have rates higher than the national average. Nationwide motor vehicle fatality rates are higher in rural areas than urban areas.<sup>24</sup>

Table 7: Motor Vehicle Crash Death Rates, 2016

State	Deaths per 100,000 Pop.	Deaths per 100 Million VMT
Illinois	8.5	0.99
Iowa	12.9	1.25
Kansas	14.8	1.34
Missouri	15.5	1.25
Nebraska	11.4	1.05
U.S.	11.6	1.16

Source: Insurance Institute for Highway Safety.<sup>25</sup>

**Congestion:** Although congestion levels are not as high in the Central Plains/Heartland Region as in other parts of the U.S., the region does experience congestion in a handful of metropolitan areas. Figure 10 shows the top four congested metropolitan areas in terms of hours of delay and the annual congestion cost per commuter. The largest metro areas—St. Louis, Kansas City, Wichita, and Omaha—predictably experience the highest absolute economic costs due to lost time and wasted fuel during traffic jams.

Truck traffic carrying freight and vehicles carrying passengers are stuck in the same congestion. Table 8 presents two truck bottlenecks in the Central Plains/Heartland Region that are identified as being in the top 100. St. Louis is home to the 36<sup>th</sup> highest ranked bottleneck, with Kansas City having the 74<sup>th</sup> ranked bottleneck. Infrastructure capacity constraints and the need to operate and maintain existing infrastructure call for the careful evaluation, inventory, and strategic decision-making that emerge from interregional collaboration and coordination.

**Truck Parking:** Many areas of the region see demand for truck parking frequently surpass supply, which interferes with drivers taking mandatory rest or encourages them to stop in undesignated parking areas, such as highway shoulders or ramps. Parking is supplied by a combination of public sources (e.g., rest areas) and private sources (e.g., commercial truck stops). States in the region are attempting to lessen the truck parking shortage through a \$25 million TIGER Grant awarded in 2015 to provide real-time truck parking information.<sup>26</sup>

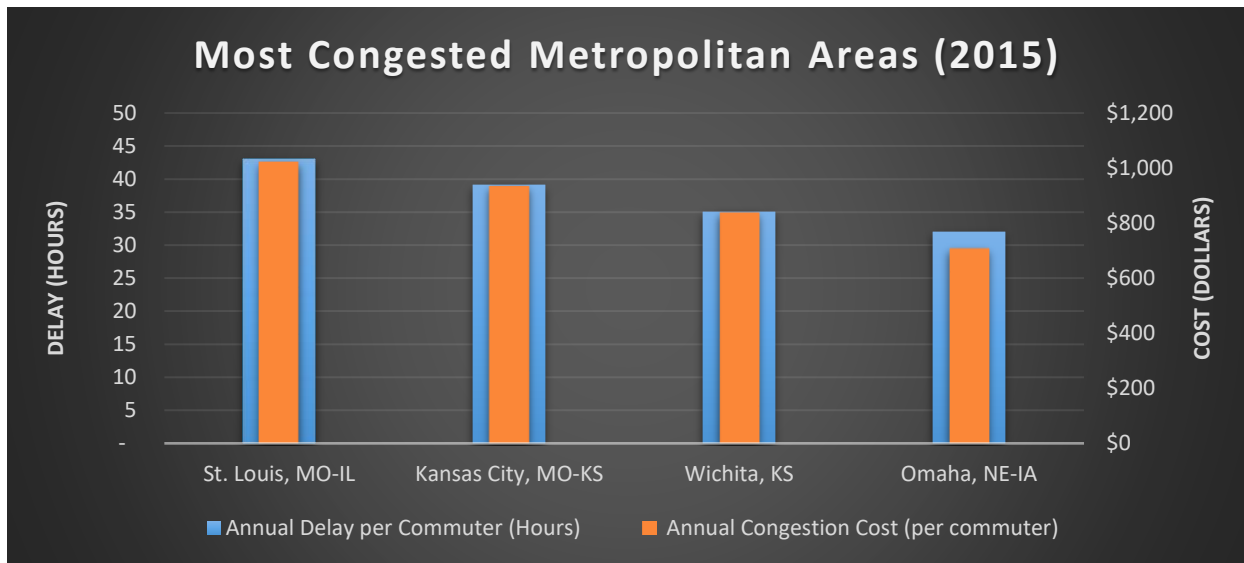
<sup>24</sup> NHTSA (2014). Rural/urban comparison Retrieved from <https://crashstats.nhtsa.dot.gov>.

<sup>25</sup> IIHS (2015). State by state. Retrieved from <http://www.iihs.org/iihs/topics/t/general-statistics/fatalityfacts/state-by-state-overview>.

<sup>26</sup> DeLong, K. (2015). Retrieved from <http://fox6now.com/2015/10/29/wisconsin-part-of-25-million-Federal-grant-for-midwest-truck-parking-information-system/>.



Figure 11: Most Congested Metro Areas in the Central Plains/Heartland Region, 2015



Source: Texas A&M Transportation Institute (2015).<sup>27</sup>

Table 8: Truck Bottlenecks in the Central Plains/Heartland Region and National Ranking

National Rank	Location	Ave Speed (mph)	Peak Ave Speed (mph)	Non-peak Ave Speed (mph)
36	St. Louis, MO: I-70 at I-64 (West)	45.5	42.4	46.6
74	Kansas City, MO: I-70 at I-670 at U.S. 71	49.1	45.0	50.7

Data Source: American Transportation Research Institute, 2018 Top 100 Bottleneck List.<sup>28</sup>

**Maintenance and State of Good Repair:** Maintaining infrastructure in a state of good repair is a challenge in the Central Plains/Heartland Region, as it is in the rest of the country, especially as transportation funding does not keep pace with infrastructure age. MAP-21 set a National goal to “maintain the highway infrastructure asset system in a state of good repair” and requires states, MPOs, and public transportation providers to transition to a performance-based planning and programming process to achieve this goal. State of good repair matters not just for operations but also for budgets since systems maintained in a state of good repair achieve the lowest annual costs for maintenance over an extended timeline. Structurally deficient bridges require significant maintenance, rehabilitation or replacement, and have received a great deal of attention due to their sheer number and their location in all parts of the country.

Figure 11 presents the number of bridges that are structurally deficient in the Central Plains/Heartland Region. Iowa has the highest number of structurally deficient bridges, while Kansas has the lowest. The percentage of bridges that are structurally deficient for all five states combined is 12.9 percent; per state, the percentage ranges from a low of 8.4 percent in Illinois to a high of 20.5 percent in Iowa.

The region also has a large system of inland waterways and locks that enable transport of bulk freight goods. Many of these systems are aged and in need of repair or replacement. Similarly, airport facilities require ongoing maintenance, as do airplane navigation aids, weather reporting

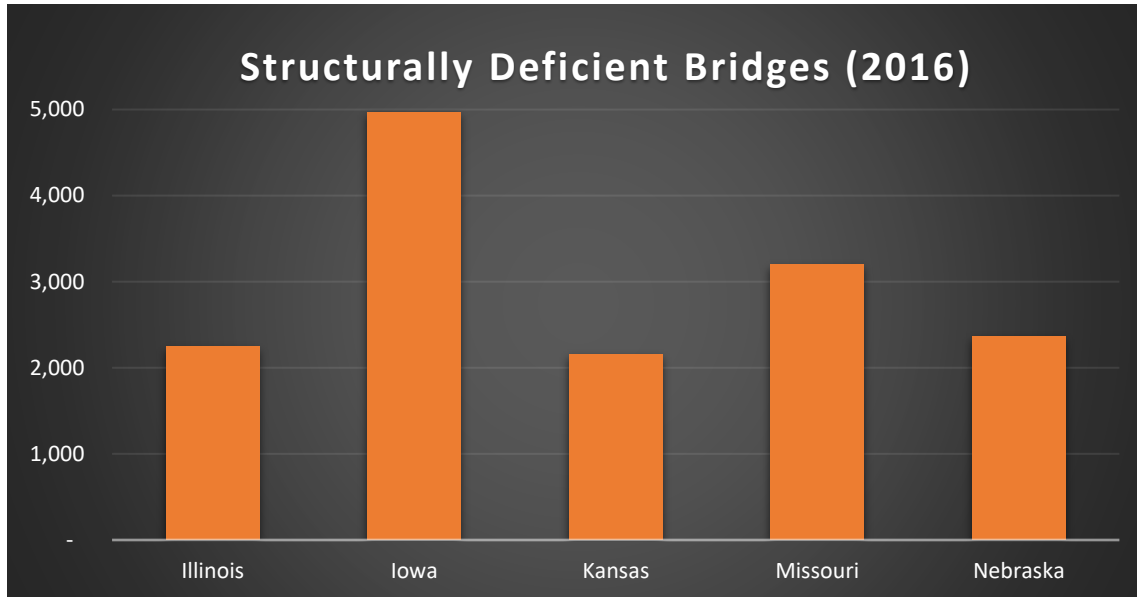
<sup>27</sup> Data retrieved from <https://mobility.tamu.edu/ums/congestion-data/>.

<sup>28</sup> Retrieved from <http://atri-online.org/2018/01/25/2018-top-truck-bottleneck-list/>.



tools, lighting, and pavement. Much of this infrastructure will require additional, reliable funding sources to maintain or upgrade to meet current standards.

Figure 12: Structurally Deficient Bridges in the Central Plains/Heartland Region



Source: Federal Highway Administration (2016).<sup>29</sup>

**Data and Funding:** Asset management must be considered when seeking solutions to improving state of good repair. However, there are asset management implementation challenges, such as having the data, methods, and decision-making process in place to prevent infrastructure condition from falling below standards, and raising sufficient maintenance funds. Much progress has been made in terms of data management and availability, as states increasingly use more sophisticated pavement and bridge management systems. Beyond the sheer quantity of data and infrastructure, the further challenge will be in funding, especially in places that have had to defer maintenance, during which time costs have compounded. Meeting maintenance needs will be difficult since many states have insufficient funds to maintain infrastructure when all funding sources are combined. Federal and state gasoline tax revenue has not kept pace with infrastructure needs, aging infrastructure, inflation, or vehicle fuel economy standards.

### CENTRAL PLAINS/HEARTLAND REGION OPPORTUNITIES

The concept of Regional Economic Partnerships provides a new framework for identifying, prioritizing, and addressing mobility and economic development challenges and opportunities across jurisdictional lines. This framework considers not only existing political boundaries, but also the spatial level at which planning should be conducted to maximize opportunities arising from agglomerations of economic activity and population. This involves coordinated planning and decision-making across boundaries for the mutual benefit of residents across a broad region. Planning across these boundaries is difficult, but it is receiving renewed attention at state, local, and Federal levels.

<sup>29</sup> Retrieved from <https://www.fhwa.dot.gov/bridge/nbi/no10/defbr16.cfm>.



This framework is also a tool to achieve the U.S. DOT's Strategic Goals recently released in U.S. DOT's Draft Strategic Plan, which reflects the Secretary's priorities for Fiscal Years 2018 through 2022.<sup>30</sup> The four Strategic Goals are:

- **Safety:** Reduce Transportation-Related Fatalities and Serious Injuries Across the Transportation System.
- **Infrastructure:** Invest in Infrastructure to Ensure Mobility and Accessibility and to Stimulate Economic Growth, Productivity and Competitiveness for American Workers and Businesses.
- **Innovation:** Lead in the Development and Deployment of Innovative Practices and Technologies that Improve the Safety and Performance of the Nation's Transportation System.
- **Accountability:** Serve the Nation with Reduced Regulatory Burden and Greater Efficiency, Effectiveness and Accountability.

To accomplish these Goals, the Plan identifies several strategies that align with a multi-jurisdictional coordination approach. Specific strategies include:

- Strengthening coordination across modes, stakeholders, jurisdictions, institutions, sectors, and international boundaries.
- Partnering with the private sector to encourage technology innovation.
- Supporting projects of national significance that leverage Federal funds, transform how infrastructure is delivered, and promise a high rate of social and economic return.
- Making targeted investments to increase freight mobility and reliability in support of economic competitiveness.
- Facilitating private sector and multimodal stakeholder collaboration to improve transportation safety and performance.
- Targeting Federal investments toward transportation projects that address high priority infrastructure needs.

The power of a multi-jurisdictional planning framework is that it is flexible; it can be adapted to particular issues and regions; it can involve short term or long term partnerships; and it can involve informal or formal working agreements. This approach enables FHWA and the State, local, and regional agencies and their partners in the Central Plains/Heartland Region to work together to achieve the U.S. DOT's strategic goals. Several opportunities for collaboration in the region are described below.

## Partnerships and Coordination

**Truck Parking Information and Management System (TPIMS) Project.** This effort is a multi-state collaboration involving Iowa and Kansas along with Michigan, Ohio, Indiana, Kentucky, Minnesota, and Wisconsin. The project is funded by a \$25 million Transportation Investment Generating Economic Recovery (TIGER) grant and additional funds from each state. TPIMS will reduce the time commercial truck drivers spend searching for parking along major freight corridors

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<sup>30</sup> U.S. DOT Strategic Plan for FY2018-2022, Draft for Public Comment. Oct. 19, 2017. <https://www.transportation.gov/dot-strategic-plan>.



and allow drivers to monitor parking availability and make decisions as they near the limit of their federally mandated hours of service. The project will be operational in 2019.

**Mid-America Freight Coalition (MAFC).** MAFC is an organization of ten states that cooperate in the planning, operation, preservation, and improvement of transportation infrastructure in the Midwest. Illinois, Iowa, Kansas, and Missouri are members, along with Indiana, Kentucky, Michigan, Minnesota, Ohio, and Wisconsin. MAFC members The MAFC has taken a leadership role in addressing the requirements of the FAST Act with regards to freight corridors. Greater coordination among the member states will encourage systematic plans to improve freight infrastructure and connectivity.

**Heartland Civic Collaborative (HCC).** HCC is a multi-state, multi-metro organization established by several members of the business community in the Central Plains/Heartland Region with partners in the public and not-for-profit sectors, to ensure a collaborative, multi-metropolitan approach to issues and economic development. The four metropolitan areas comprising the HCC are Des Moines, Kansas City, Omaha, and St. Louis. Within the focus area of transportation, HCC recognizes that cooperation between the metropolitan areas within the region can guide the direction of transportation investment across the states, and developed a regional transportation strategy.

**Kansas City SmartPort.** KC SmartPort is a non-profit economic development organization focused on attracting freight-based companies, manufacturing and distribution providers, e-commerce providers, and more to the wider Kansas City region. Partners include Kansas DOT, Mid-America Regional Council (MARC), railroad companies, other businesses, and economic development agencies.

**Civic Council of Greater Kansas City.** The Council is comprised of business and civic leaders and was established to provide leadership on issues of importance to the Kansas City community. One of the group's focus areas is communities and infrastructure.

**Omaha Economic Development Partnership.** This is a six-county economic development partnership focused on the Omaha metropolitan area. The Partnership works collaboratively across jurisdictional boundary lines to create jobs and encourage capital investment in the Omaha metropolitan region.

## Transportation Technology

**Hyperloop One** is a startup company whose vision is to connect cities through extremely high-speed transportation of people and freight and has developed a high-speed tube transportation system. The company has selected a Kansas City to St. Louis route as one of 11 sites for consideration for development of its system. The Missouri Hyperloop Coalition is a group of public and private sector organizations formed in October 2017 by the St. Louis Regional Chamber, the KC Tech Council, the University of Missouri, the Missouri Innovation Center, and Missouri DOT to organize and funding an engineering feasibility study for the project. The study is underway and is expected to be completed in later 2018.

**Connected and Automated Vehicles.** Connected vehicle (CV) and automated vehicle (AV) technology applications hold promise for providing more efficient use of existing roadway capacity, alleviating the need for roadway expansion projects. Emerging technologies may have a significant on the freight sector by enabling more efficient goods movement, optimizing shipping and logistics patterns, and reducing labor. CV and AV technologies will have potentially



transformative impacts on personal and freight mobility, safety, business models, and land use. While there are many benefits, this technology will also present challenges, especially during the transition period, which may be decades long, where AV, CV, and traditional vehicles without advanced technologies share the region's roads.

Connected and automated trucks hold promise for achieving new efficiencies in goods movement and may trigger an economic boom in the freight industry. Truck drivers may no longer be restricted by hours of service limits, and platooning trucks holds promise for significant fuel savings. Full implementation of AV/CV trucks will not be seen in the near future. However, technological advances, including aerodynamic efficiencies and semi-autonomous features such as automated braking systems and platooning, already are under way. A report by McKinsey & Company on the future of commercial goods movement predicts that trucking companies can expect revenues to increase by 50 percent over the next decade, with the bulk of that value created by new technologies.<sup>31</sup> The report projects that by 2025, at least one third of new heavy trucks will be semi-autonomous, minimizing the need for a full-time drivers. Lower operating costs due to decreases in driver demand could drop the total cost of truck ownership by 35 to 50 percent.

Significant improvements in freight supply chain information are expected in the future. The industry already is moving to more of an appointment system for freight deliveries and pickups. Shipping companies are increasingly using software systems to optimize truck movements, pickups, and deliveries, with resulting improvements in energy use and driver time efficiency.<sup>32</sup> These technology applications will allow trucks to travel farther in less time, and increase the range of service located within a one-day trip of distribution centers.

**Intelligent Transportation Systems (ITS).** Another area of opportunity to overcome capacity constraints is ITS. ITS measures can address many of the problems that come with overcrowded infrastructure, such as safety or emergency vehicle access. Moreover, they may even help make more efficient use of existing infrastructure through such measures as better traffic light sequencing or driver communication, effectively increasing capacity without adding physical infrastructure.

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<sup>31</sup> <https://www.trucks.com/2016/09/12/one-third-trucks-autonomous-2025/>.

<sup>32</sup> Federal Highway Administration. *Freight Advanced Traveler Information System (FRATIS) Impact Assessment: Final Report*. FHWA-JPO-225. <https://ntl.bts.gov/lib/57000/57000/57031/FHWA-JPO-16-225.pdf>.



## APPENDIX

### MULTI-JURISDICTIONAL COORDINATION STUDIES, PLANS, AND FREIGHT PLAN RESOURCES

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7. U.S. DOT Strategic Plan for FY2018-2022, Draft for Public Comment. Oct. 19, 2017. <https://www.transportation.gov/dot-strategic-plan>



## APPENDIX C: KEY CONTACTS

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### FHWA

**James Garland**

Office of Planning

Lead Transportation Specialist

202-366-6221

[James.Garland@dot.gov](mailto:James.Garland@dot.gov)

**Spencer Stevens**

Office of Planning

Transportation Planner

202-366-0149

[Spencer.Stevens@dot.gov](mailto:Spencer.Stevens@dot.gov)





## APPENDIX D: EVENT PARTICIPANTS

Last Name	First Name	Organization	Email
Achelpohl	Ron	Mid-America Regional Council	rona@marc.org
Anderson	Kelley	Kansas City Southern Railway	kanderson@kcsouthern.com
Backlund	Rick	FHWA—KS Division	richard.backlund@dot.gov
Ball	Cheryl	Missouri DOT	cheryl.ball@modot.mo.gov
Bartlett	Aaron	Mid-America Regional Council	abartlett@marc.org
Berkley	Bill	Tension Corp.	wsberkley@tension.com
Bobo	Karen	FHWA—IA Division	karen.bobo@dot.gov
Bodde	David	Clemson University	bodded@alum.mit.edu
Bowen	Elli	KC SmartPort	bowen@kcsmartport.com
Buckner	Brandon	FHWA Office of Planning	brandon.buckner@dot.gov
Burnell	Tamiko	FHWA Office of Freight Mgmt and Ops.	tamiko.burnell@dot.gov
Collings	Andrew	Des Moines Area MPO	acollings@dmampo.org
Comer	Brian	HNTB	bcomer@hntb.com
Conway	Doug	WATCO Companies	dconway@watcocompanies.com
DeMent	Michael	HNTB	mdement@hntb.com
DeMers	Michael	Missouri DOT	michael.demers@modot.mo.gov
Douglas	Lindsey	Union Pacific Railroad	lmdouglas@up.com
Durako	Jim	Illinois DOT	james.durako@illinois.gov
Fields	Darryl	Mid-America Regional Council	dfields@marc.org
Fischer	Mark	Nebraska DOT	mark.fischer@nebraska.gov
Floberg	Mike	Kansas DOT	mike.floberg@ks.gov
Foundoukis	Paul	FHWA—KS Division	paul.foundoukis@dot.gov
Garland	James	FHWA Office of Planning	james.garland@dot.gov
Gilbert	Kelly	Metropolitan Energy Center	kelly@metroenergy.org
Graor	Amanda	Mid-America Regional Council	agraor@marc.org
Green	Kelly	SEMPO	kelly@klgengineering.com
Grigsby	Mike	Kansas City Area Transit Authority	mgrigsby@kcata.org
Grisham	Kent	Nebraska Trucking Association	kent@nebtrucking.com
Gutierrez	Chris	KC SmartPort	gutierrez@kcsmartport.com
Herrick	Chris	Kansas DOT	chris.herrick@ks.gov
Hohulin	Doug	Nokia	doug.hohulin@nokia.com
Jarrold	Richard	Kansas City Area Transit Authority	djarrold@kcata.org
Johnson	Randy	Missouri DOT	randy.johnson@modot.mo.gov
Kohler	Jon-Paul	FHWA—IL Division	jon-paul.kohler@dot.gov
Linn	Beth	City of Edgerton	blinn@edgertonks.org
Litteral	Sean	FHWA—IA Division	sean.litteral@dot.gov
Long	Chance	St. Joseph Area Transp. Study Org.	clong@stjoemo.org
Lorenz	Julie	Burns & McDonnell	jlorenz@burnsmcd.com
Luther	Justin	FHWA—NE Division	justin.luther@dot.gov
Maddox	John	Kansas DOT	john.maddox@ks.gov
Maistros	Alex	Cambridge Systematics	amaistros@camsys.com
Markley	Craig	Iowa DOT	craig.markley@iowadot.us
McAnarney	Matt	Illinois DOT	matt.mcanarney@illinois.gov
McMahon	Brad	FHWA—MO Division	bradley.mcmahon@dot.gov



Last Name	First Name	Organization	Email
Miller	Steve	Miller Schriger, LLC	smiller@millerschirger.com
Moore	Davonna	Kansas DOT	davonna.moore@ks.gov
Nations	John	Bi-State Development	jmnations@bistatedev.org
Nelson	Phil	Wichita Area MPO	pnelson@wichita.gov
Ostdick	Holly	Illinois DOT	holly.ostdick@illinois.gov
Page	Karyn	Kansas Global Trade Services	page@kansasglobal.org
Patrick	Catherine	Kansas DOT	catherine.patrick@ks.gov
Piernicky	Mike	Olsson Associates	mpiernicky@olssonassociates.com
Potts	Ingrid	MRIGlobal	ipotts@mriglobal.org
Powers	Josh	Johnson County Government	joshua.powers@jocogov.org
Quinton	Drew	Volpe	drew.quinton@dot.gov
Reinhart	Tony	Ford Motor Company	treinha1@ford.com
Riggs	Randy	The Civic Council of Greater KC	rriggs@kcciviccouncil.org
Ross	Catherine	Georgia Institute of Tech.	catherine.ross@design.gatech.edu
Rowson	Randy	CDM Smith	rowsonr@cdmsmith.com
Schaefer	Donald	Mid-West Truckers Association	dons@midwesttruckers.com
Schwach	Paula	City of Westwood Hills KS	benignatude@gmail.com
Smith	Scott	Heartland Civic Collaborative	scott.smith7578@gmail.com
Smith	Griffin	Missouri DOT	griffin.smith@modot.mo.gov
Stanley	John	MRIGlobal	jstanley@mriglobal.org
Steenhoek	Mike	Soy Transportation Coalition	msteenhoek@soytransportation.org
Stevens	Spencer	FHWA Office of Planning	spencer.stevens@dot.gov
Stewart	Shundrekia	BNSF Railway	shundrekia.stewart@bnsf.com
Strange	Amy	Mid-America Regional Council	astrange@marc.org
Suter	Carol	City of Gladstone	csuter49@gmail.com
Teel	Michelle	Missouri DOT	michelle.teel@modot.mo.gov
Thompson	Drew	Black & Veatch	thompsond@bv.com
Tracy	Betsy	FHWA—IL Division	betsy.tracy@dot.gov
Vanderhoof	Mike	Illinois DOT	michael.vanderhoof@illinois.gov
Wagner	John	Wagner Logistics	john.wagner@wagnerlogistics.com
Ward	Kevin	FHWA—MO Division	kevin.ward@dot.gov
Warm	David	Mid-America Regional Council	dwarm@marc.org
Werning	Joseph	FHWA—NE Division	joseph.werning@dot.gov
Wild	Jim	East-West Gateway COG	jim.wild@ewgateway.org
Wright	Beth	City of Olathe	eawright@olatheks.org
Youell	Greg	Metropolitan Area Planning Agency	gyouell@mapacog.org
Zafft	Allan	Grand Island MPO	allanz@grand-island.com
Zibers	Caitlin	St. Joseph Area Transp. Study Org.	czibers@stjoemo.org

Federal Highway Administration  
Office of Planning, Environment, & Realty  
1200 New Jersey Avenue, SE  
Washington, DC 20590  
202-366-4000

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