Chapter 1 – Introduction

KEY POINTS

- The amount and value of freight are critical components of the overall economic health of Missouri.
- Missouri's multimodal freight system supports the movement of trucks, planes, barges, and trains as they transport over one billion tons of freight valued at more than $1.2 trillion per year.
- Every resident in the State spends a significant portion of their disposable income ($4,500 per year) on transportation, whether directly or indirectly, in the goods they purchase.
- Truck freight will continue to grow in importance based on both value and tonnage. While at a slower rate, the freight moved by air, water, and rail will also continue to grow.

Making smart investments in the freight transportation system can provide better options for Missouri businesses to get their products to both domestic and global markets. An improved freight transportation system can also lower transportation costs and create jobs.

With the help of hundreds of key stakeholders, the Missouri Department of Transportation (MoDOT) has drafted this State Freight Plan to make sure that freight continues to move smoothly. The plan provides a better understanding of Missouri's existing freight transportation system, establishes goals and strategies for updating the system over the next 10+ years, guides future investments in freight transportation, and prioritizes freight projects that would provide the most benefits.

MoDOT recognizes the importance of freight transportation in contributing to the economic vitality and competitiveness of the State of Missouri. In 2013, for example, Missouri exported $12.9 billion in freight to foreign countries, representing a 79 percent increase in the past 10 years.

The Economic Importance of Freight

There are strong correlations between the amount or value of freight shipped and the overall health of a State or regional economy. The freight transportation system is how Missouri's four largest exports—transportation equipment, chemicals, food products, and machinery—are delivered around the world. Freight movement is vital to the State, and increases in freight transportation are directly related to increases in economic growth.

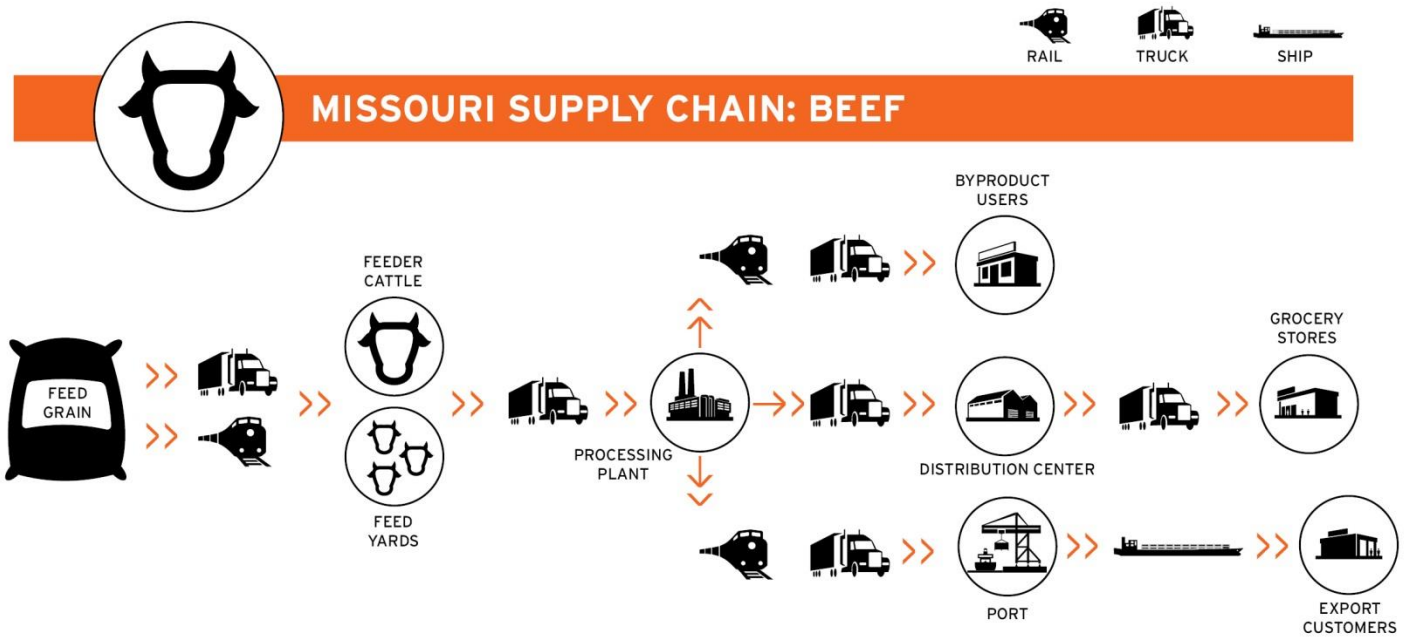
The cost of transporting and storing freight directly impacts everyone. One study estimated that the average person in the United States spends approximately $4,500 per year[1] in transportation and storage costs related to goods purchased and consumed. The cost of transportation is a significant portion of the price of a loaf of bread. Improving the efficiency of freight transportation can lower the cost of goods and result in more disposable income for consumers.

Supply Chains: Pathways for Products

Efficient freight transportation in Missouri is essential for industry supply chains. Supply chains are the pathways that raw materials and products move from their original sources, through the production process, and eventually to the end consumer. Supply chains have grown more sophisticated as businesses look to minimize supply chain costs and maximize profits. For example, Missouri is a major producer of beef. Feed grain and feeder cattle are imported to the feed yards. Finished cattle are then shipped to a meat processing plant to be processed, and then the meat is shipped to grocery stores or other final destination as a finished product (as illustrated in **Figure 1-1**).

[1] http://www.cts.umn.edu/events/freight/2009/documents/murphy.pdf

Figure 1-1: Missouri Beef Supply Chain



Many products Missourians buy are created and delivered through these complex supply chains and each step uses the freight transportation network to deliver source materials and finished goods in a timely manner. If the freight network breaks down, so do these supply chains. The efficiency of these chains has a significant impact on how various businesses compete.

Current and Future Challenges

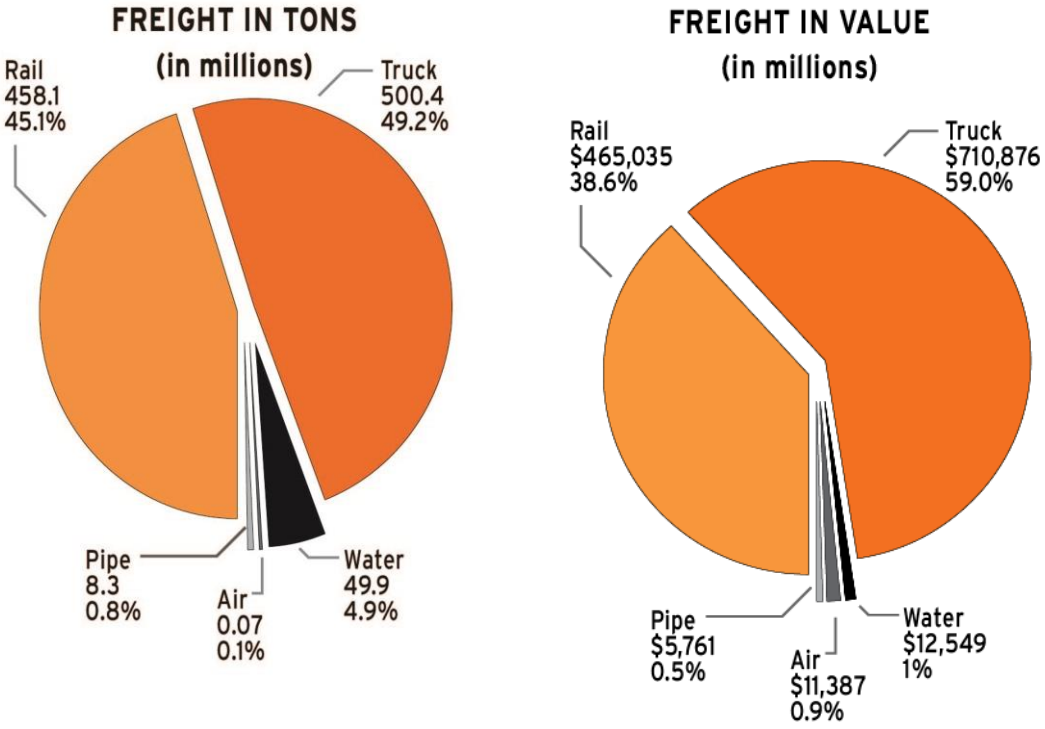
Over the next 20 to 30 years, the growth of freight transportation throughout the nation is expected to continue to accelerate. The reduction in and unpredictability of funds needed to maintain and improve the transportation network significantly impairs the ability to continue to improve the supply chain. All transportation modes—road, rail, air, and water—continue to experience congestion along major corridors and at key bottlenecks, including critical interstate highway interchanges; outdated and under-designed locks, dams, and ports; and the two largest rail terminals—St. Louis and Kansas City. Major air cargo hubs (i.e. Atlanta, Chicago, and Dallas-Fort Worth) are operationally sensitive to disruptions, such as from weather or maintenance. Delays at these major hubs often reverberate throughout the U.S. air system, including the Kansas City and St. Louis airports.

How Freight Travels in Missouri

By far, the largest percentage of freight in Missouri travels either by truck on the roadway network or by rail. As shown in **Figure 1-2**, data indicate that trucks move 49 percent of the freight tonnage and 59 percent of the freight value in Missouri, while rail lines move 45 percent of the freight tonnage and 39 percent of the freight value. Waterways transport five percent of the freight tonnage and one percent of the freight value. Air cargo and pipelines combined transport approximately one percent of the

freight tonnage and one percent of freight value in Missouri.

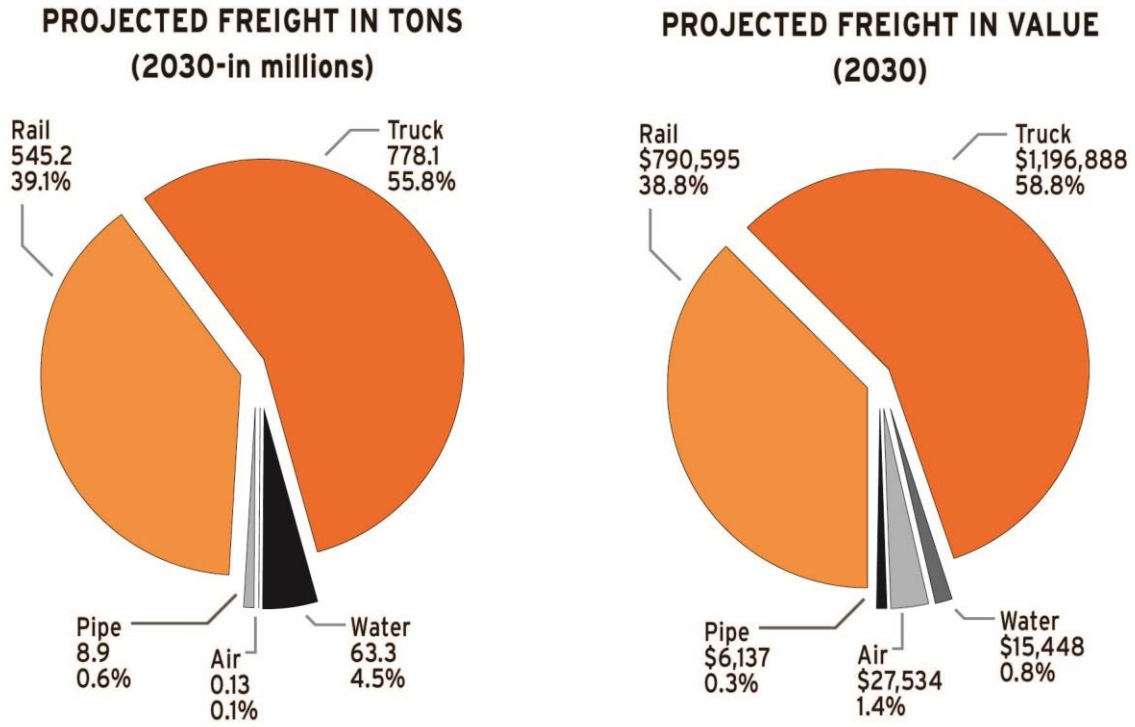
Figure 1-2: Actual Freight Movement by Tonnage and Value per Mode (2011)



Source: Prepared by CDM Smith, based on Transearch® data for 2011

Data suggests that truck and rail will be the dominant modes in 2030, as shown in **Figure 1-3**. Trucks are forecasted to transport 56 percent of the freight tonnage and 59 percent of the freight value, while rail lines are projected to transport 39 percent of the freight tonnage and 39 percent of the freight value in 2030. Waterways are expected to move five percent of the freight tonnage and one percent of the freight value in 2030. Air cargo and pipelines combined will transport approximately one percent of the freight tonnage and two percent of freight value in Missouri.

Figure 1-3: Projected Freight Movement by Tonnage and Value per Mode (2030)



Source: Prepared by CDM Smith, based on TRANSEARCH® data for 2011

Improvements in the truck freight network will continue to be critical to the freight system. However, all transportation modes are expected to see significant increases in freight tonnage. Improving the efficiency and reliability of alternative modes — rail, water, air, and pipelines — will grow in importance.

Missouri Freight Goals

In 2013, MoDOT began *On the Move* stakeholder outreach activities to help identify a vision for the future of transportation in Missouri as part of an update to MoDOT's Long Range Transportation Plan. *On the Move* was a MoDOT initiative, completed in 2013, in which Missourians from all 114 counties were included in conversations about the State's transportation future.

This State Freight Plan is an offshoot of that planning effort that included four focus areas, or pillars, that drive transportation decisions at the statewide level. Building on the four pillars outlined in Missouri's Long Range Transportation Plan and through collaboration with freight partners, opportunities and actions have been identified as the goals of the Freight Plan. These goals are:

On the Move was a MoDOT initiative, completed in 2013, in which Missourians from all 114 counties and the City of St. Louis were included in conversations about the State's transportation future.

- **Maintenance** – Maintain the freight system in good condition by keeping highways and bridges in good condition and supporting the maintenance of railways, waterways, airports, and multimodal connections.
- **Safety** – Improve safety on the freight system by decreasing the number and severity of crashes involving commercial vehicles and improving safety at railroad crossings.
- **Economy** – Support economic growth and competitiveness in the State through strategic improvements to the freight system.
- **Connectivity and Mobility** – Improve the connectivity and mobility of the freight system by reducing congestion and increasing reliability on the roadways; supporting improved efficiency of rails, waterways, and airports; and improving connections between freight modes.

Missouri's Long Range Transportation Plan also includes three strategic considerations that have been incorporated into this Freight Plan. These include:

- **Environmental** – Reduce and/or mitigate adverse environmental impacts of freight.
- **Organizational and Process** – Institute policies and practices that support the freight system, such as exploring funding flexibility and stability and using technology to improve operations on the freight system.
- **Customers and Partners** – Improve coordination and collaboration with freight stakeholders.

National Freight Goals

The Missouri State Freight Plan was organized to meet the requirements of the *Fixing America's Surface Transportation (FAST) Act* and the national freight goals developed as part of that legislation. The Freight Plan also supports the freight-related strategies and recommendations in Missouri's Long Range

As part of FAST ACT, the U.S. Department of Transportation directed states to develop a freight plan. The Missouri State Freight Plan fits within this guidance.

Transportation Plan, which incorporates the key findings in MoDOT's Tracker, MoDOT's previous State Freight Study, Missouri's Statewide Rail Plan, Missouri River Plan, and other regional initiatives as they relate to freight mobility.

It is important that the Missouri State Freight Plan not stand alone, but instead align and be informed by the national, State and local plans and policies that already exist or are in development. FAST Act requires the U.S. Department of Transportation to develop a National Freight Policy that will include the following goals for the national freight system:

- Improve the contribution of the freight transportation system to economic competitiveness, reduce congestion and eliminate bottlenecks on the National Multimodal Freight Network (NMFN) and increase productivity, particularly for domestic industries and businesses that create high-value jobs;
- Improving the safety, security, and resiliency of the freight transportation system;
- Improving the state of good repair of the freight transportation system;
- Using innovation and advanced technology to improve the safety, efficiency and reliability of the NMFN
- Improve the economic efficiency and productivity of the NMFN;
- Improve the reliability of freight transportation;
- Improve the short- and long- distance movement of goods that travel across rural areas between population centers, travel between rural areas and populations centers, and travel from the Nation's ports, airports and gateways to the NMFN;
- Improve the flexibility of States to support multi-state corridor planning and the creation of multi-state organizations to increase the ability of States to address multimodal freight connectivity and
- Reducing adverse environmental and community impacts of the freight transportation system.

Figure 1-4 illustrates how MoDOT's goals and strategic considerations align with the national FAST Act goals.

Figure 1-4: MoDOT Goals and Strategic Considerations

National Freight Goals	Missouri Freight Goals				Missouri Freight Strategies		
	Maintenance	Safety	Economy	Connectivity and Mobility	Environmental	Organizational and Process	Customers and Partners
(1) Increase economic competitiveness, reduce congestion and eliminate bottlenecks, increase productivity	✸	✸	✸	✸	✸	✸	✸
(2) Improve the safety, security, and resiliency	✸	✸	✸	✸		✸	✸
(3) Improve the state of good repair	✸			✸			✸
(4) Use innovation and advanced technology to improve the safety, efficiency and reliability	✸	✸	✸	✸		✸	✸
(5) Improve the economic efficiency and productivity	✸	✸	✸	✸		✸	✸
(6) Improve the reliability	✸	✸	✸	✸			✸
(7) Improve the short- and long- distance movement	✸	✸	✸	✸		✸	✸
(8) Multi-State corridor planning and connectivity			✸	✸		✸	✸
(9) Reducing adverse environmental and community impacts	✸			✸	✸		✸

Plan Organization

The Missouri State Freight Plan is organized so that the elements required by FAST Act are met within the following chapters:

Chapter 1, Introduction – Establishes the context for the creation of the Missouri State Freight Plan. This chapter identifies the strategic goals of the plan and how they dovetail with other federal and State policies and plans.

Chapter 2, Stakeholder Outreach – Outlines the extensive outreach and involvement activities that were performed throughout the planning process. This chapter summarizes information from key freight stakeholder interviews, as well as motor carrier, shipper, and receiver survey results and analysis

along with input received at forums and through website comments.

Chapter 3, Missouri Freight System – Includes an overview of the various components that make up the freight system. The chapter provides a summary of existing transportation assets and data on freight movement.

Chapter 4, Freight Network Conditions and Performance – Provides an analysis of conditions of the freight system including bottlenecks, level of service, safety and crashes, and pavement and bridge conditions. The chapter also discusses performance measures for these areas.

Chapter 5, Needs Assessment and Freight Forecast – Looks at freight system needs through an analysis of the identified strengths and problems. The chapter looks at the 20-year State freight forecast, emerging trends, and freight impacts on communities.

Chapter 6, Economic Context of Freight – Outlines the importance of freight in the State's economy. The chapter looks at the role of freight in supporting job creation, economic development, supply chains in Missouri, and regional economies.

Chapter 7, Freight Policies, Strategies, and Institutions – Discusses the State's freight policies and strategies for guiding freight-related transportation decisions. The chapter includes discussion of funding programs, freight-related institutions, freight roles and responsibilities, private infrastructure owners, statutory and constitutional constraints, regional freight planning activities, and the State's priorities.

Chapter 8, The Decision-Making Process – Lays out the State's process for identifying freight transportation improvements. The chapter describes how the various strategies, projects, and policy changes were considered and prioritized.

Chapter 9, Strategies and Recommendations – Outlines recommendations for programs, policies, and projects that address the needs identified in Chapter 5.

Chapter 10, Action Plan and Implementation Strategies – Outlines the next steps to include organizing the Freight Advisory Committee (FAC), identifying funding and financing options, and establishing action steps to implement the freight strategy and goals.

Appendices – Provides addition detailed information and analysis used to prepare the Missouri State Freight Plan and include:

- Appendix A: Assets and Freight Flow
- Appendix B: Trends, Needs, and Issues
- Appendix C: Strengths and Challenges
- Appendix D: Stakeholder Outreach
- Appendix E: Goals and Performance Measures
- Appendix F: Scenario Planning
- Appendix G: Freight Project List
- Appendix H: Freight District Summaries

  - Central District
  - Kansas City District
  - Northwest District
  - Northeast District
  - St. Louis District
  - Southeast District
  - Northwest District
- Appendix I: Freight Modal Profiles
  - Highways
  - Rail
  - Ports/Waterways
  - Air Cargo
  - Intermodal Connectors
  - Pipelines
  - Freight Commodities
  - Trade and Growth
- Appendix J: Freight Topical White Papers
  - Intermodal Transloading
  - Airports
  - Port Investment in Container-on-Vessel Service