



SFRP

State
Freight & Rail
Plan

2026

Contents

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Chapter 1. Goals, Objectives and Performance Metrics

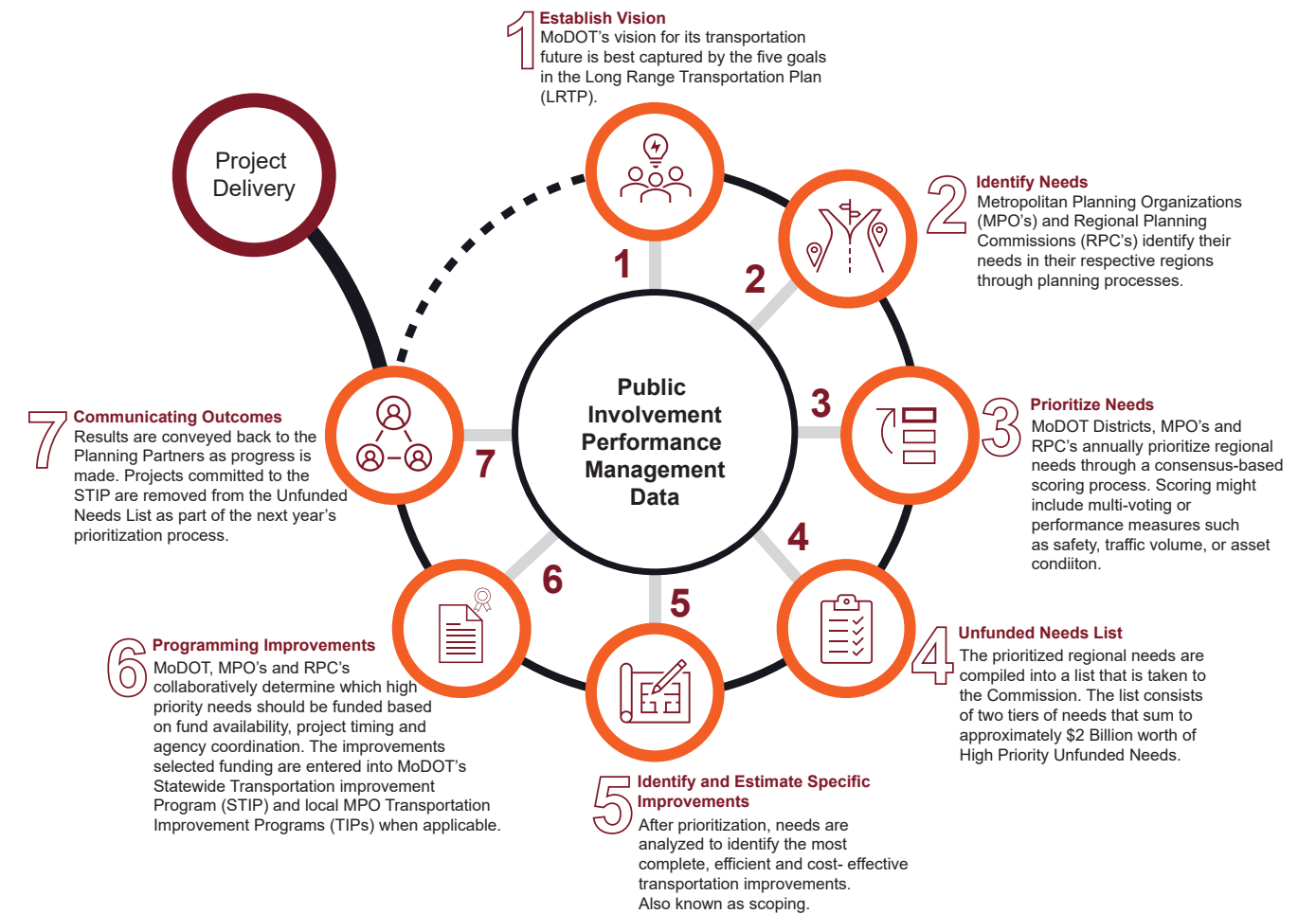
The Missouri Department of Transportation (MoDOT) developed this State Freight and Rail Plan (SFRP) to guide its multimodal freight and passenger rail investment for the next 20 years. Grounded in data and reinforced by stakeholder support, this plan aims to capitalize on Missouri’s freight transportation and passenger rail advantages to energize the state’s economy and boost its competitiveness. **Figure 1** displays MoDOT’s performance-based planning cycle, which the SFRP follows.

Moving people and goods in Missouri is more than providing a network of transportation options. It also involves aligning state and national policies. When federal guidelines, MoDOT’s mission and goals, Missouri’s Long-Range Transportation Plan (LRTP) and SFRP are aligned and supported by robust, meaningful performance measures the path to progress is smooth.

Missouri’s plans and initiatives help create its freight action agenda, which focuses on improving the performance and efficiency of the freight transportation system. The goals and objectives of the SFRP build on previous planning efforts, with a focus on safe and efficient movement of freight and rail passengers today and in the decades to come. These goals will drive performance measures and inform multimodal freight and passenger rail investment decision-making. The SFRP interconnects with and shares goals with other MoDOT plans and statewide efforts. Summaries of these plans appear in **Appendices A, B, C, D and E**. They include:

- 2018 Missouri Long-Range Transportation Plan
- 2018 Missouri State Freight Plan
- 2021 Missouri State Rail Plan
- 2022 Missouri SFRP
- Show Me Zero: 2026-2030
- MoDOT Transportation Systems Management and Operation Program and Action Plan
- MoDOT Transportation Asset Management Plan
- Missouri Governor’s Supply Chain Task Force

Figure 1 – Performance Based Planning Cycle



Source: MoDOT, Planning Framework for Transportation




SFRP Goals and Objectives

MoDOT leadership carefully considered the needs of Missouri’s transportation system, looked to federal goals and objectives as well as MoDOT’s own strategic vision to draft goals and objectives for this effort. The department presented and discussed the draft with local, state, regional and national stakeholders, who offered comments and refinements. The goals and objectives of the 2026 SFRP are the same as those included in the LRTP. MoDOT identified six goals to steer the SFRP, each with specific and actionable objectives to help MoDOT reach those goals. SFRP goals are described below and objectives are described in **Table 1**.

- **STEWARDSHIP** - Preserve the assets and services currently in place
- **SAFE** - Enhance safety for all users of the transportation system
- **RELIABLE** - Maintain a transportation network that is efficient and dependable
- **CONNECTED** - Maximize mobility and connect communities through multimodal transportation options
- **INNOVATIVE** - Leverage technology and creative solutions to build a future-ready transportation network
- **PROSPEROUS** - Drive economic growth through transportation investments

Table 1 – SFRP Goals and Objectives

| SFRP Goals | SFRP Objectives |
|---|--|
|  <p>1. Stewardship</p> | 1.1 Provide a transportation system in a state of good repair through meeting or exceeding established performance targets . |
| | 1.2 Explore and secure stable funding to support the current system and services for each mode of transportation. |
| | 1.3 Maintain system resilience by adapting to changing life cycle costs , advancing technologies , an evolving workforce and growing transportation demand . |
| | 1.4 Enhance the transportation system by avoiding, minimizing, or mitigating impacts to natural and cultural resources . |

| SFRP Goals | SFRP Objectives |
|--|---|
|  <p>2. Safe</p> | 2.1 Invest in system-wide safety improvements to reduce fatalities and serious injuries for all modes. |
| | 2.2 Enhance transportation safety with a focus on the Show-Me Zero – Missouri Strategic Highway Safety Plan emphasis areas. |
| | 2.3 Enhance safety and security at transportation mode connection points . |
| | 2.4 Expand partnerships with safety advocates around the state to identify and implement safety improvements . |
| | 2.5 Reduce barriers to access and provide protection for vulnerable road users . |
| | 2.6 Consider truck parking utilization and gaps during multimodal needs identification and project development . |
|  <p>3. Reliable</p> | 3.1 Take a practical/life cycle approach to highway system capacity expansion. |
| | 3.2 Increase reliability of the transportation system in bottleneck areas . |
| | 3.3 Enhance transportation infrastructure resilience to maintain the movement of people and goods during traffic disruptions . |
| | 3.4 Provide reliable and accessible multimodal transportation options for all users . |
| | 3.5 Enhance emergency and alternative routes . |
|  <p>4. Connected</p> | 4.1 Provide an accessible and connected transportation system for all users . |
| | 4.2 Consider preservation and provision of additional multimodal connectivity during project development . |
| | 4.3 Expand and improve the multimodal transportation system with options and connections throughout the state. |
| | 4.4 Consider first-and last-mile multimodal freight connections during needs identification and project development . |
|  <p>5. Innovative</p> | 5.1 Explore technology and develop business practices that result in lower life-cycle costs . |
| | 5.2 Support automated and connected vehicle technology by advancing the Connected and Automated Vehicle Action Plan . |
| | 5.3 Understand and deploy innovative work zone warning and protection devices . |
| | 5.4 Identify and plan for alternative funding sources to recoup gas tax revenue lost from alternatively fueled vehicles. |
| | 5.5 Integrate traffic management systems and vehicle detection systems to monitor and improve traffic congestion . |
|  <p>6. Prosperous</p> | 6.1 Increase partnership coordination with local communities, regional and metropolitan organizations, businesses, transportation service providers and other sectors to identify what transportation projects can better support local economies . |
| | 6.2 Support projects that provide economic benefit . |
| | 6.3 Focus federal discretionary grant applications on transformational projects with a high economic impact that stimulate the local economy and strengthen the competitiveness of Missouri’s regions . |



Goals and Objectives

MoDOT's SFRP is a strategic document that outlines the mission, goals and priorities of Missouri's freight and passenger rail systems. This plan builds on goals established in other efforts, including U.S. Department of Transportation (USDOT) freight and rail plans, prior Missouri freight and rail plans, MoDOT's LRTP and Missouri's Statewide Transportation Improvement Plan (STIP) creating a continuum of goals, objectives and strategies for Missouri into the future.

As a comprehensive assessment of current conditions, the SFRP provides short-and long-term goals to improve and enhance Missouri's freight and passenger rail infrastructure. Clear objectives support the six goals of the SFRP and will guide MoDOT to successful execution.

Review of Existing MoDOT Goals

When setting goals, vision and direction for the SFRP and its 20-year outlook, MoDOT first reexamined its own departmental goals. MoDOT's departmental goals are referred to as Tangible Results, grouped into the pillars of Safety, Service and Stability.

Shown below, Tangible Results address the ways the agency's customers perceive and experience MoDOT's performance. They are the goals that bring the organization's values and mission into focus.

MoDOT Tangible Results

- Moving Missourians Safely and Doing So Safely at MoDOT
- Providing Outstanding Customer Service
- Delivering Efficient and Innovative Transportation Projects
- Operating a Reliable Transportation System
- Managing Our Assets
- Stabilizing Resources and Engaging Our Workforce
- Building a Prosperous Economy for All Missourians

As an early adopter of using performance measures to drive results, MoDOT centered its metrics on its Tangible Results. Each quarter, the [resulting 48 measures](#) are published online in MoDOT's Tracker document. Using Tracker, MoDOT assesses the level of success toward achieving its mission and living its values.

Comparison of MoDOT and National Best Practices

After examining the department's goals, MoDOT reviewed USDOT national multimodal freight and rail plan goals and objectives. These included the USDOT's National Multimodal Freight Policy Goals; National Highway Freight Program Goals (NHFP); and State Rail Plan Goals. See **Table 2** for a synthesized list of these goals.

MoDOT then considered the system and strategic goals of past planning efforts. System goals consider the physical condition, needs and issues involved in building and maintaining infrastructure, while increasing connectivity and usefulness of the system. These include consideration for system maintenance, safety, support for economic growth and connectivity and mobility. Strategic goals support planning, stakeholder collaboration and plan implementation. These include reducing or mitigating environmental impacts of freight movement, organizational and process policies that support the freight system and improved coordination and partnership with freight stakeholders.

The 2022 SFRP's goals recognized that multimodal freight and passenger rail system strategic goals often work in tandem. Its seven goals included focus on maintenance; safety; economic growth and competitiveness; connectivity and mobility; equity and environmental resiliency; process and innovation; and customers and partnerships.

These documents were considered when developing the draft goals. MoDOT presented the draft goals to stakeholders, including the Missouri Chamber of Commerce, Missouri Public Ports, Missouri Trucking Association (MoTA), Missouri Rail Passenger Advisory Committee (MORPAC), Class 1 Rail Carriers and Shortline Rail Carriers. The stakeholders helped refine the draft goals into the current vision for Missouri's transportation system. The resulting six goals drive Missouri's 20-year vision for both the SFRP and LRTP. They will guide formation of strategies to achieve desired outcomes for Missouri through 2050.





Table 2 – Comparison of National and MoDOT Plan Goals and Objectives

| Synthesis of National Multimodal Freight Policy Goals; National Highway Freight Program Goals; and State Rail Plan Goals | MoDOT Goals | 2026 LRTP | 2022 SFRP | 2026 SFRP |
|--|--|---|---|--|
| <p>Improve safety, security, reliability and resiliency of multimodal freight transportation</p> <p>Use innovation and advanced technology to improve the safety, efficiency and reliability of the National Multimodal Freight Network (NMFN)</p> | <p>Move Missourians safely and do so safely at MoDOT</p> | <p>Safe: Work to enhance the safety of the transportation system for all users</p> | <p>Safety: Improve safety and security of the multimodal freight and passenger rail system by supporting efforts to decrease the number and severity of freight vehicle crashes, increase truck parking options and improve safety throughout the multimodal freight system and the passenger rail network</p> | <p>Safe: Enhance safety for all users of the transportation network</p> |

| | Federal Goals | MoDOT Goals | 2026 LRTP | 2022 SFRP | 2026 SFRP |
|------------------|---|---|---|--|---|
| Service | <p>Reduce congestion Eliminate bottlenecks</p> <p>Maintain a state of good repair Improve short- and long- distance movement of goods</p> <p>Reduce adverse environmental impacts of freight movement on the National Multimodal Freight Network (NMFN) Multimodal connectivity</p> | <p>Provide Outstanding Customer Service</p> <p>Deliver Efficient and Innovative Transportation Projects</p> <p>Operate a Reliable Transportation System</p> | <p>Reliable: Promote efficiency and reliability in the transportation network</p> <p>Connected: Improve mobility and connect communities through expanded multimodal choices</p> | <p>Connectivity and Mobility: Improve the connectivity and mobility of the multimodal freight and passenger rail system by reducing congestion on the roadways; increasing reliability of the roadways and passenger rail network; supporting improved efficiency of rails, waterways and airports; and improving connections between freight modes and between passenger rail and other passenger travel modes</p> <p>Equity and Environmental Resiliency: Support equity and environmental resiliency of the multimodal freight and passenger rail system</p> <p>Customers and Partnership: Improve coordination and collaboration with regional planning partners and multimodal freight and passenger rail stakeholders</p> | <p>Reliable: Maintain a transportation network that is efficient and dependable</p> <p>Connected: Maximize mobility and connect communities through multimodal transportation options</p> |
| Stability | <p>Strengthen economic competitiveness</p> <p>Increase productivity and economic efficiency, particularly for domestic industries and businesses that create high value jobs</p> | <p>Manage our assets Stabilize resources and engage our workforce</p> <p>Build a prosperous economy for all Missourians</p> | <p>Stewardship: Maintain current assets and services we have today.</p> <p>Prosperous: Boost the economy through transportation investments</p> <p>Innovative: Integrate emerging technologies to make our transportation system prepared and future-ready</p> | <p>Maintenance: Maintain the multimodal freight and passenger rail system in good condition by keeping highways and bridges in good condition and supporting the maintenance of railways, waterways, airports and multimodal connections</p> <p>Economy: Support economic growth and competitiveness in Missouri through strategic improvements to the multimodal freight network and passenger rail system</p> <p>Process and Innovation: Institute policies and practices that support the multimodal freight and passenger rail systems, encourage innovation and promote an efficient use of resources</p> | <p>Stewardship: Preserve the assets and services currently in place</p> <p>Prosperous: Drive economic growth through transportation investments</p> <p>Innovative: Leverage technology and creative solutions to build a future-ready transportation network</p> |

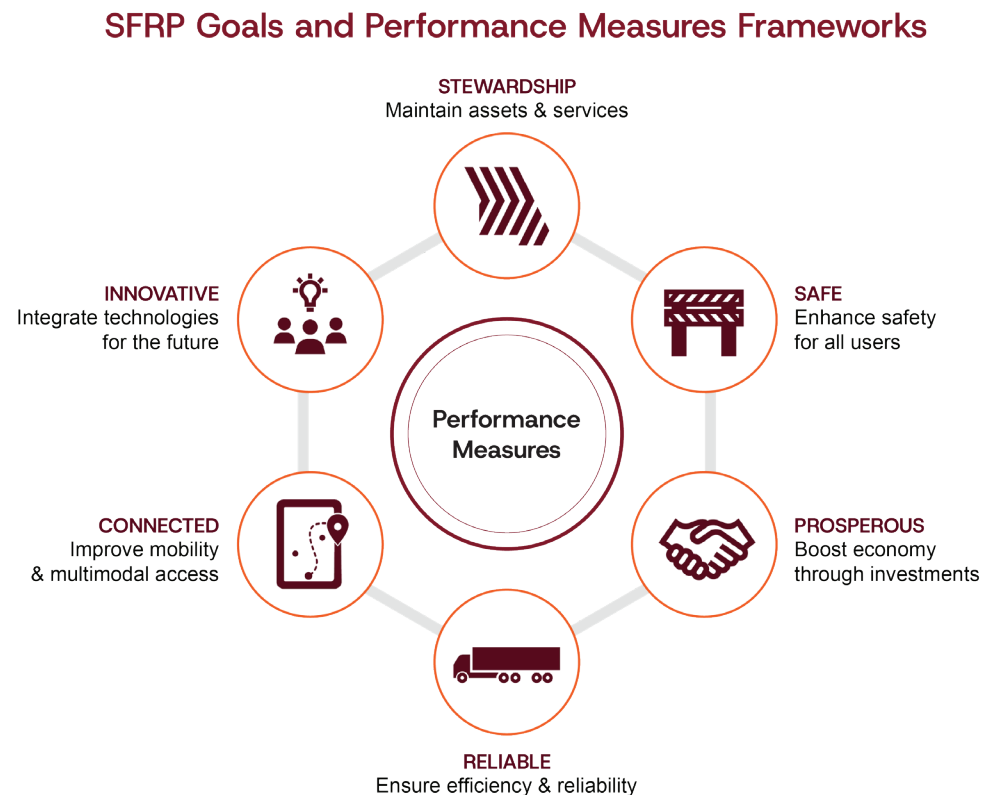


Freight and Passenger Rail Performance Measures

Overview

Performance measures provide a way to evaluate progress toward achieving the goals of the SFRP. By monitoring system conditions and outcomes, MoDOT can determine whether investments and policies are advancing its vision for the freight and rail transportation network. The performance measures in this plan are organized around six goals: Stewardship, Safe, Prosperous, Reliable, Connected and Innovative (**Figure 2**). Each goal establishes a broad aspiration for the freight and passenger rail system, while the associated performance measures track progress in a consistent and transparent way. Together, these measures will help promote accountability, guide decision-making and demonstrate the value of rail investments to stakeholders and the public alike.

Figure 2 – Categories of Freight Performance Measures



Source: GFT.

Performance Measures

MoDOT’s Tracker provides solid documentation which the Missouri Highways and Transportation Commission (MHTC) and MoDOT leadership can use to assess current conditions and respond with approval, additional guidance or course corrections. With this tool they can assess its freight infrastructure investment and performance.

In order to be included in the Tracker system, the measures must meet the following rules.

- Assess conditions under MoDOT’s control or influence
- Be based on established results
- Be clear
- The value of the information generated must justify the effort and/or funds spent on data collection efforts
- Be quantifiable

Table 3 through **Table 8** outline proposed SFRP performance measures and describe how these measures meet the Missouri SFRP goals and objectives. The tables also indicate which performance measures are federally required, which measures currently exist in MoDOT’s Tracker performance management tool and the sources of data that might be used to measure performance toward goals.



Source: MoDOT



Table 3 – Stewardship Performance Measures

| Goal | Objective | Performance Measure (Proposed) | Federally Required ¹ | Existing MoDOT Tracker Measure | Data Source |
|------------------------------------|---|---|---------------------------------|--|---|
| Stewardship | 1.1 State of Good Repair | % of pavement in good condition on freight-significant highways (MoDOT's freight network) | X | Condition of state highways – 5c | Smoothness and pavement structural data – MoDOT |
| | 1.1 State of Good Repair | Number of weight restricted bridges on MoDOT's freight network | X | | MoDOT bridge data |
| | 1.1 State of Good Repair | Condition of Major bridges on MoDOT's freight network | X | Statewide condition of all bridges and statewide condition of major bridges – 5a Tracker | MoDOT |
| | | | X | % of structurally deficient deck area on National Highway System – 5b Tracker | MoDOT |
| | 1.1 State of Good Repair | Airport pavement condition at cargo airports | X | | Bureau of Transportation Statistics (BTS) – United States (U.S.) Airport Runway Pavement Conditions |
| | | (Minnesota) ² | | | |
| 1.4 Natural and Cultural Resources | Navigable River Ports, Locks and Dams Service Life (Minnesota) ³ | | | MoDOT and U.S. Army Corps of Engineers (USACE) | |

¹FHWA, "National Performance Management Measures; Assessing Performance of the National Highway System, Freight Movement on the Interstate System and Congestion Mitigation and Air Quality Improvement Program," Accessed September 16, 2025. <https://www.federalregister.gov/documents/2017/01/18/2017-00681/national-performance-management-measures-assessing-performance-of-the-national-highwaysystem>.

²Minnesota Department of Transportation (MnDOT), "Minnesota GO: Planning Minnesota's Transportation Future," Accessed September 16, 2025. <https://www.minnesotago.org/final-plans/state-freight-plan/appendix-b>.

³MnDOT, "Minnesota GO: Planning Minnesota's Transportation Future," Accessed September 16, 2025. <https://www.minnesotago.org/final-plans/state-freight-plan/appendix-b>.

Table 4 – Safe Performance Measures

| Goal | Objective | Performance Measure (Proposed) | Federally Required | Existing MoDOT Tracker Measure | Data Source |
|------|---------------------------------------|--|--------------------|--------------------------------|--|
| Safe | 2.1 System-Wide Safety | Overall freight-involved fatalities | X | | Missouri State Highway Patrol (MSHP)/ Statewide Traffic Accident Records System (STARS) data and MSHP Water Patrol |
| | 2.2 Show-Me Zero | Number and rate of fatalities involving Commercial Motor Vehicles | X | MoDOT Tracker Measure 1e | MSHP/STARS data |
| | 2.1 System-Wide Safety | Number of truck parking spaces (publicly and privately owned) | | | MoDOT Facilities Management Data, SFRP Truck Parking Profile and Private sector (search for U.S. Route private inventory and consider including spaces at parking only private facilities) |
| | 2.3 Mode Connection Points | Number of at-grade railroad crossing fatalities | | | MSHP/STARS data |
| | 2.3 Mode Connection Points | Number of at-grade railroad crossing serious injuries | | | MSHP/STARS data |
| | 2.3 Mode Connection points | Number of at-grade incidents by warning device (Kansas) ⁴ | | | MSHP/STARS data and MoDOT Traffic information |
| | 2.6 Truck Parking Gaps Identification | Proportion of transportation studies and plans including consideration of truck parking issues | | | MoDOT |

⁴Kansas Department of Transportation (KSDOT), "Kansas State Freight Plan," Accessed September 16, 2025. https://www.transportation.gov/sites/dot.gov/files/2023-12/KS_StateFreightPlan_FHWA_Approved.pdf.



Table 5 – Prosperous Performance Measures

| Goal | Objective | Performance Measure (Proposed) | Federally Required | Existing MoDOT Tracker Measure | Data Source |
|------------|-----------------------------|---|--------------------|--|--|
| Prosperous | 3.2 Economic Benefit | Benefit ratio for every dollar invested in STIP projects | X | Economic return from transportation investment – 7a Tracker | MoDOT – Impact Analysis for Planning Model |
| | 3.1 Support Local Economy | Jobs created annually through transportation investment in STIP projects | X | Economic return from transportation investment – 7a Tracker | MoDOT – Impact Analysis for Planning model |
| | 3.3 Strengthen Economy | % of economic development funds committed to projects – Tracker 7b | X | % of economic development funds committed to projects – Tracker 7b | MoDOT, Missouri Department of Economic Development (MoDED) and local entities |
| | 3.2 Economic Benefit | Cost savings through reduced bottlenecks | X | | Federal Highway Administration (FHWA) Bottleneck Tracker (Freight Mobility Trends Analysis Tool); Regional Integrated Transportation Information System (delay cost reporting tool); U.S. Bureau of Labor Statistics (BLS) (passenger car delay cost per hour); American Transportation Research Institute (ATRI) (delay cost per truck by hour) |
| | 3.3 Strengthen Economy | Number of Oversize and Overweight (OSOW) barriers removed (Minnesota) ⁵ | | | Identify barriers using MoDOT traffic management system (TMS)/MoDOT Carrier Express to catalog OSOW width and height barriers, geometric issues and weight restricted structures that prevent use of otherwise acceptable routing |
| | 3.1 Support Local Economies | Number of interstate and intrastate motor carriers based in Missouri by number of registered trucks | | | MoDOT |

Table 6 – Reliable Performance Measures

| Goal | Objective | Performance Measure (Proposed) | Federally Required | Existing MoDOT Tracker Measure | Data Source |
|----------|-------------------------------|---|--------------------|---|--|
| Reliable | | % of interstate providing reliable travel times | X | Reliability on major routes – 4a | Annual Hours of Truck Delay – National Performance Management Research Data Set |
| | 4.2 Increase Reliability | Cost of congestion for commercial motor vehicles | X | Cost of congestion on selected state roads – 4b | Regional Integrated Transportation Information System, BLS and ATRI |
| | 4.2 Increase Reliability | % of rural interstate providing reliable travel times | X | Unplanned incidents on major routes – 4d | FHWA Bottleneck Tracker |
| | 4.2 Increase Reliability | Truck travel time reliability on top 100 bottlenecks | X | | FHWA Bottleneck Tracker |
| | 4.3 Infrastructure Resilience | Clearance time for incidents/crashes/hazardous material incidents | | Average time to clear traffic incidents – 4c | MoDOT Traffic Management Centers (TMC) |
| | 4.4 Multimodal Transportation | Number of truck parking areas and their capacities (public and private) | | | MoDOT Facilities Management Data, Truck Parking Profile, inventory of truck parking spaces at water, rail and air transfer facilities, search for U.S. Route privately owned truck parking inventory |
| | 4.4 Multimodal Transportation | OSOW barriers that exist on freight network highways | | | MoDOT Carrier Express, MoDOT Traffic Management System |
| | 4.4 Multimodal Transportation | % of rail tracks with 286,000-pound railcar capacity rating | | | BTS* Survey of Missouri railroads |
| | 4.4 Multimodal Transportation | Tons of traffic arriving/departing at a public water port | | | Missouri public port records |
| | 4.4 Multimodal Transportation | % of on-time departures and arrivals at cargo airports | | | BTS TranStats database; USDOT Air Travel Consumer Report |

⁵MnDOT, “Minnesota GO: Planning Minnesota’s Transportation Future,” <https://minnesotago.org/>.



Table 6 continued

| Goal | Objective | Performance Measure (Proposed) | Federally Required | Existing MoDOT Tracker Measure | Data Source |
|----------|-------------------------------|---|--------------------|--------------------------------|--|
| Reliable | 4.3 Infrastructure Resilience | Identify portions of freight network vulnerable to natural disruptors. (Flood – GIS map layer 100-500-year flood. Earthquake overlay. Number of reported deer strikes. Extreme heat, Extreme cold. National Oceanic and Atmospheric Administration (NOAA) – data) | X | | National Oceanic and Atmospheric Administration (NOAA) (flooding, extreme temperatures), Missouri Department of Natural Resources (earthquake), Missouri Department of Conservation (deer strikes) |
| | | Reduce adverse environmental impacts of freight movement on the NMFN (Requirement of the National Multimodal Freight Policy Goals) | | | |

*The % of rail tracks with 286,000-pound capacity was not found on the BTS website. This is likely due to recent review of federal website data.

Table 7 – Connected Performance Measures

| Goal | Objective | Performance Measure (Proposed) | Federally Required | Existing MoDOT Tracker Measure | Data Source |
|-----------|---|---|--------------------|--------------------------------|------------------------------|
| Connected | 5.1 Accessible and Connected | % of major generators with roadway right-sized access to interregional corridors and major highways | | | MoDED |
| | 5.3 Multimodal Transportation System First- and Last-Mile | % of major freight generators with rail access | | | MoDED |
| | 5.2 Multimodal Transportation System | Number of intermodal facilities (rail) | | | BTS |
| | 5.3 Multimodal Transportation System First- and Last-Mile | Availability of container-handling capability and/or bulk transfer capability at public water port | | | Missouri public port records |

Table 7 continued

| Goal | Objective | Performance Measure (Proposed) | Federally Required | Existing MoDOT Tracker Measure | Data Source |
|-----------|--|--|--------------------|--------------------------------|---|
| Connected | 5.2 Multimodal Connectivity During Project Development | Proportion of transportation studies and plans including consideration of freight modal issues. (Minnesota) ⁶ | | | MoDOT, Metropolitan Planning Organizations (MPOs), Regional Planning Commissions (RPCs), local municipalities |

Table 8 – Innovative Performance Measures

| Goal | Objective | Performance Measure (Proposed) | Federally Required | Existing MoDOT Tracker Measure | Data Source |
|------------|----------------------------|-------------------------------------|--------------------|---|------------------|
| Innovative | 6.1 Lower Life-Cycle Costs | Project value by contracting method | | Innovative contracting and value engineering – 3e Tracker | |
| | 6.1 Lower Life-Cycle Costs | % of OSOW permits auto issued | | | MoDOT statistics |



Source: MoDOT

⁶MnDOT, "Minnesota GO: Planning Minnesota's Transportation Future," <https://minnesotago.org/>.



Chapter 2. Missouri's Freight and Rail Context



Source: MoDOT

The Missouri SFRP serves as a strategic blueprint for enhancing the state's freight transportation network, supporting economic growth, global competitiveness and innovation. As a vital transportation hub in the heart of the United States, Missouri plays a crucial role in connecting key domestic and international markets through its comprehensive multimodal freight system, including highways, railroads, waterways and airports. This updated plan reflects the evolving needs of Missouri's industries, incorporates the latest technological advancements and aligns with national freight goals to address current and future challenges.

With Missouri's central location and well-established infrastructure, it is positioned as a critical gateway for goods traveling across the United States (U.S.) and beyond. This plan aims to improve the efficiency and safety of freight movement, enhance regional connectivity, reduce congestion and promote economic development across all sectors. From agriculture and manufacturing to energy and retail, Missouri's freight system supports a diverse economy, moving billions of tons of goods annually.

This updated Missouri SFRP builds on past achievements, addressing the pressing need for infrastructure improvements, reducing congestion and implementing innovative solutions. By prioritizing investments in key corridors and fostering collaboration among public and private stakeholders, the plan will strengthen Missouri's freight network, ensuring it remains resilient, reliable and ready to meet the demands of a rapidly evolving global economy.

National Freight Planning

The USDOT defines the vision and goals of the national multimodal freight system in the National Freight Strategic Plan (NFSP). The USDOT uses the NFSP to "guide national freight policy, programs, initiatives and investments."⁷ The NFSP demonstrates a vision to enhance the national freight system's safety, efficiency and competitiveness. It addresses infrastructure challenges, supply chain disruptions and increasing freight demand, particularly as e-commerce and global trade grow. See **Table 9** for the NFSP goals and strategies.

Relative to Missouri, the NFSP emphasizes the importance of inland waterways, rail corridors and intermodal hubs, in addition to highway corridors. The Mississippi and Missouri Rivers play a key role in agricultural exports and St. Louis serves as a critical freight gateway. This plan highlights highway and rail investments to support Missouri's agricultural and manufacturing industries.

By 2043, national freight demand is expected to grow significantly, requiring strategic investments to maintain economic growth and global competitiveness.



Source: MoDOT

⁷U.S. Department of Transportation, 2020 National Freight Strategic Plan (Washington, DC: U.S. Department of Transportation, 2020), <https://www.transportation.gov/freight/NFSP>.



Table 9 – NFSP Goals and Strategies

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

Missouri's Context

In the context of national freight planning, Missouri is integral to enhancing the efficiency and resilience of the U.S. supply chain. The state supports crucial industries, including agriculture, manufacturing and energy, making it a central player in moving billions of tons of goods each year. Missouri's participation in national freight initiatives ensures alignment with broader goals, such as improving safety, reducing congestion and promoting innovation.

Highway Network

Missouri has approximately 34,000 miles of MoDOT- owned roads, with nearly 10,000 miles designated as part of the Interstate System. The state is a key player in the national highway network, with major routes such as those listed to the right:

In addition to these freight intensive interstate routes, Missouri is served by additional interstates plus an extensive network of state highways, which are essential for local and regional freight movement.

Interstate 70: A critical east-west corridor running from St. Louis to Kansas City, facilitating a significant portion of freight traffic across the state and nation.

Interstate 44: Connecting St. Louis to Tulsa, Oklahoma and extending into Texas, this corridor is vital for freight movement from the Midwest to the southern U.S.

Interstate 435: A critical beltway around the Kansas City Metro area connecting I-29, I-35, I-70 and I-49.

Interstate 29: A corridor connecting Kansas City to Sioux Falls, South Dakota and Fargo, North Dakota before connecting to the Manitoba Province in Central Canada.

Interstate 55: Running from Chicago through St. Louis to the Gulf Coast, this route is essential for freight traffic between the Midwest and the South.

Interstate 35: A major north-south route from Laredo, Texas, near the Mexican border, through Kansas City, to Duluth, Minnesota, just south of the Canadian border.

Interstate 49: Beginning in Kansas City and running along the western edge of Missouri and extending to Lafayette, Louisiana, near the Gulf Coast.

Interstate 270: A critical beltway around St. Louis connecting with I-70, I-44 and I-55.



Rail Network

Missouri boasts one of the most extensive rail networks in the U.S., with over 3,700 miles of track. This system serves both passenger and freight needs, making it crucial for industries such as agriculture and manufacturing. There are five Class I railroads operating in Missouri, including:

- Burlington Northern Santa Fe Railway (BNSF)
- Canadian Pacific Kansas City
- CSX Transportation
- Norfolk Southern Corporation
- The Union Pacific Railroad (UP) and Norfolk Southern Corporation's proposed merger had not yet been approved at the time of this plan's creation. Therefore, for the purposes of this plan, they are treated as separate entities.)

Additionally, several Class III short line switching, terminal and tourist railroads operate in Missouri. The state's rail system is integral for transporting bulk commodities such as agricultural products and manufactured goods.



Waterways

Missouri's position along the Mississippi and Missouri Rivers makes it a key player in inland waterway freight movement. The state has 1,050 miles of navigable waterways, as seen in **Figure 3**. The Mississippi River serves as an important artery for barge traffic, especially for bulk commodities like grain, coal and petroleum. Missouri's waterways move an average of \$19.2 billion of cargo annually.⁸ With over 200 private ports, 19 public port authorities and one tri-state commission, Missouri has a thriving waterborne freight industry.

Figure 3 - Missouri's Waterways and Ports



⁸Transearch. Transearch 2023 data. Data analyzed by Gannett Fleming (GFT) 2023.



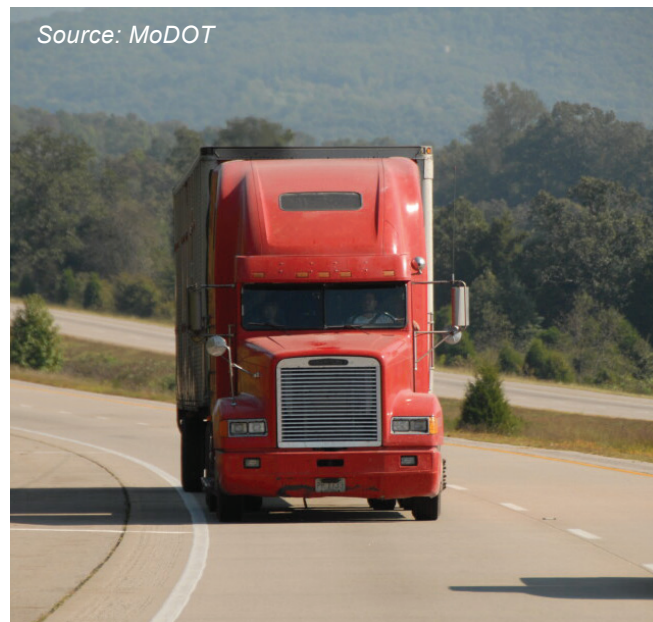
Airports

Freight aviation is a key component of Missouri’s transportation network, facilitating the rapid movement of goods across the state and beyond. Major airports, including St. Louis Lambert International (STL), Kansas City International (KCI) and Springfield-Branson National Airport (SGF) serve as critical hubs for air cargo operations. Air freight is essential for industries requiring fast, reliable shipping, such as manufacturing, healthcare and e-commerce. Missouri’s central location enhances distribution efficiency, supporting economic growth. Investing in airport infrastructure and improving connectivity strengthens supply chains and attracts businesses. By expanding freight aviation capabilities, Missouri can maintain its role as a vital logistics hub in the Midwest.

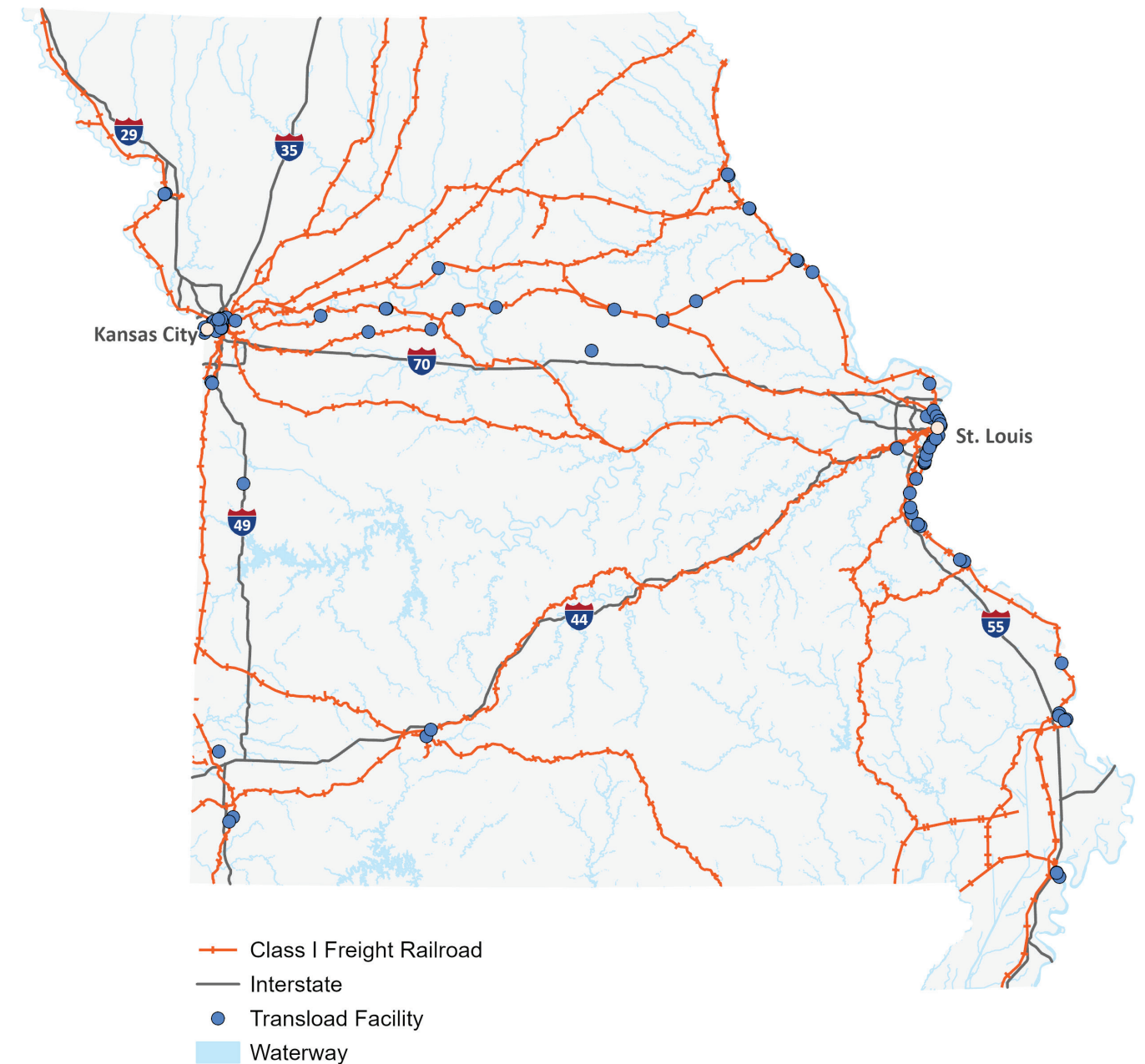
Transload Facilities

Missouri’s intermodal and transload facilities connect the state’s extensive highway and rail systems and enable the transfer of goods between trucks, trains and barges. These facilities are operated by private companies as a service to their customers. Intermodal and transload facilities can affect the overall cost of logistics, increase efficiency, reduce congestion and burden on the highway system and generate greater returns on public and private infrastructure investments.⁹ For these reasons, these facilities strengthen Missouri’s ability to compete domestically and internationally.¹⁰

3 CARGO AIRPORTS (STL, MCI AND SGF)



While these facilities are distributed across the state, the majority of intermodal and transload activity occurs in metropolitan areas, most notable in the Kansas City and St. Louis metropolitan areas. These facilities include:



⁹Missouri Chamber Foundation, Transportation 2030: Making Missouri a Leading Logistics Hub, 15 (Jefferson City, MO: Missouri Chamber of Commerce and Industry, 2020), <https://mochamber.com>.
¹⁰Missouri Department of Transportation, Missouri State Freight Plan (2017). Chap. 3, 3–13, <https://www.modot.org/sites/default/files/documents/>.



MoDOT's Statutory Guidance

The passage of The Passenger Rail Investment and Improvement Act of 2008 led to requirement of states to develop State Rail Plans under Federal Rail Administration guidance. Later in 2015, the Fixing America's Surface Transportation Act required states to develop State Freight Plans in accordance with Federal Highway Administration guidance. In 2021, the Infrastructure Investment and Jobs Act (IIJA) provided further direction for the state freight plans. Together, these Acts encourage the development of policies, priorities and strategies to plan, fund and operate passenger rail and multimodal freight service across the U.S.

The State of Missouri provides additional guidance through state statutes, supplementing federal requirements, on how the state plans, funds and operates multimodal freight and passenger rail activities. These statutes, passed by the Missouri legislature, are laws that abide by the state constitution. The state constitution provides the framework and gives structure. The Code of State Regulations guide how to implement statutes.

Appendix A provides details on the numerous legal statutes and sections creating the framework for Missouri rail service. Missouri Port Authorities Association (MPAA) actions are guided by Chapter 68 of the Missouri Revised Statutes. Aviation is guided by Missouri Revised Statutes section 305.230.

MoDOT's Existing Freight and Rail Plans

2022 Missouri State Freight and Rail Plan

In 2022, the MoDOT elected to combine the state freight and rail plans. Previously, the rail plan was updated in 2012 and the freight plan in 2017. The combined plan outlined an integrated strategy for freight and rail transportation with three pillars: Safety, Service and Stability. This plan addresses post-pandemic supply chain disruptions, trends like near-shoring and renewable energy and critical infrastructure challenges such as bottlenecks and truck parking shortages.

For the full list of recommendations, refer to the [2022 Missouri SFRP](#).

Bordering States' Freight Plans

Missouri shares its borders with eight states, making it a critical hub for freight movement in the region. Given the interconnected nature of freight transportation, it is essential to understand the strategies and priorities of neighboring states. This section and **Table 10** provides an overview of each bordering state's freight plan, highlighting their goals, objectives and key connections to Missouri's transportation network. By examining these plans, Missouri can align its freight strategies to enhance regional coordination, improve efficiency and support economic growth.

Table 10: Bordering States' Freight Plan Overviews

| State | Goals | Objectives | Key Connections to Missouri |
|----------|---|--|--|
| Kansas | <ul style="list-style-type: none"> Enhance economic growth and competitiveness. Improve safety, security and resilience. Maintain and improve freight network conditions. Reduce environmental impacts. | <ul style="list-style-type: none"> Identify and address freight bottlenecks Invest in infrastructure supporting key industries. Enhance multimodal connectivity. Promote sustainable freight practices. | <ul style="list-style-type: none"> Emphasize collaboration with neighboring states. Identifies opportunities for joint projects along I-70 corridor. |
| Nebraska | <ul style="list-style-type: none"> Enhance economic growth. Improve safety and resilience. Maintain freight infrastructure. Protect the environment. | <ul style="list-style-type: none"> Address infrastructure bottlenecks. Improve multimodal connectivity. Ensure the freight system supports economic development. Reduce environmental impacts of freight movement. | <ul style="list-style-type: none"> Highlights opportunities for coordination and collaboration with Missouri along shared networks such as the Missouri River, I-29 and intermodal facilities. |
| Oklahoma | <ul style="list-style-type: none"> Support economic vitality. Improve safety and resilience. Maintain infrastructure in good condition. Enhance system reliability. Protect the environment. | <ul style="list-style-type: none"> Identify and address freight bottlenecks. Improve safety at high-risk locations. Invest in infrastructure that supports key industries. Enhance multimodal connectivity. Promote sustainable freight operations. | <ul style="list-style-type: none"> Highlights regional freight connections in Missouri through I-44 and rail links. Emphasizes improving supply chain efficiency and strengthen economic ties with Missouri. |



| State | Goals | Objectives | Key Connections to Missouri |
|-----------|---|---|--|
| Arkansas | <ul style="list-style-type: none"> Enhance economic competitiveness. Improve safety and security. Maintain infrastructure. Enhance mobility and reliability. Protect the environment. | <ul style="list-style-type: none"> Address critical freight bottlenecks. Improve safety across all freight modes. Invest in infrastructure supporting economic growth. Enhance multimodal connections. Reduce environmental impacts of freight movement. | Identifies that Missouri ranks among Arkansas's top trading partners, with 15.1 million tons of goods transported via key corridors I-55 and I-49. |
| Illinois | <ul style="list-style-type: none"> Develop policies and deploy innovative technologies. Foster public-private partnerships. Improve safety, resilience and reliability. Use data-driven approaches for asset management. Promote sustainability. | <ul style="list-style-type: none"> Prioritize freight-related plans and policies. Foster collaboration to enhance freight movement. Improve safety and reliability. Use data to inform decision-making. Ensure freight investments consider environmental and community impacts. | Strengthens regional economic ties through robust infrastructure investments. |
| Iowa | <ul style="list-style-type: none"> Enhance economic vitality. Improve safety, security and resilience. Maintain infrastructure Enhance reliability and efficiency. Protect the environment. | <ul style="list-style-type: none"> Identify and address freight bottlenecks. Improve safety across all freight modes. Invest in infrastructure supporting economic growth. Enhance multimodal connectivity. Promote sustainable freight practices. | Supports regional connectivity and economic ties with Missouri via the Avenue of the Saints. |
| Tennessee | <ul style="list-style-type: none"> Support economic growth. Enhance safety and resilience. Maintain infrastructure. Improve system reliability and efficiency. Protect the environment. | <ul style="list-style-type: none"> Address critical freight needs. Improve reliability and efficiency. Invest in infrastructure supporting technological advancements. Minimize negative environmental impacts. | Recognizes Missouri's role in Tennessee's freight network, with major corridors like I-55 and rail links facilitating trade between the states. |
| Kentucky | <ul style="list-style-type: none"> Enhance economic growth and competitiveness. Improve safety, security and resilience. Maintain and improve freight system conditions. Protect and enhance the environment. | <ul style="list-style-type: none"> Address infrastructure bottlenecks. Improve multimodal connectivity. Support economic development. Reduce environmental impacts. | Indirect benefit to regional trade through the development of the Interstate 69 Ohio River Crossing. |

Regional Freight Studies

In addition to state and national freight planning efforts, several regional studies have been conducted that provide valuable insights into freight movement within Missouri. These studies play a crucial role in understanding regional transportation trends, challenges and opportunities. This section examines key regional freight studies, highlighting their findings and implications for Missouri's freight network.

2013 St. Louis Regional Freight Study

The 2013 St. Louis Regional Freight Study outlines a strategic plan to enhance freight transportation, economic growth and infrastructure efficiency in the region. It recommends establishing a bi-state Freight Transportation Authority to oversee freight infrastructure, issue bonds and coordinate investments across Missouri and Illinois. This was implemented in 2014 as the St Louis Regional Freightway. Key priorities include improving freight corridors, modernizing rail, highway and river transport and aligning industrial land use with transportation hubs. The study identifies 23 key industrial areas for redevelopment and proposes a five-year capital investment plan. It also promotes trade expansion through Foreign Trade Zones and public-private collaboration to streamline logistics and attract businesses.



Environmental sustainability is emphasized, with strategies to reduce emissions and improve infrastructure efficiency. Challenges include financial constraints, bi-state coordination and regulatory hurdles, requiring a well-structured governance model.

By incorporating the strategies outlined in the 2013 St. Louis Regional Freight Study, this plan aims to create a more efficient, sustainable and competitive freight network, ensuring long-term economic benefits for the St. Louis region.



2020 Heartland Freight Technology Plan

The 2020 Heartland Freight Technology Plan, sponsored and led by the Heartland Freight Technology Consortium, provides a roadmap for integrating emerging freight technologies across the Central Plains, covering parts of Illinois, Iowa, Kansas, Missouri and Nebraska. The plan aims to harmonize regulations, improve data sharing and enhance multimodal freight transportation. Key components include:

- Stakeholder Collaboration: Establishing a consortium to guide implementation.
- Economic Nodes & Drivers: Identifying critical freight corridors and economic hubs.
- Technology Integration: Evaluating automation, electrification and data-driven freight solutions.
- Data Management: Standardizing data sharing between agencies and private sector partners.
- Implementation Blueprint: Outlining short-, medium- and long-term actions to advance regional freight technology.



Source: MoDOT

The plan prioritizes Advanced Driver Assistance Systems (ADAS), electric truck infrastructure and intermodal freight improvements, promoting economic competitiveness and sustainability.

2022 Rail Corridor Identification and Development

The Federal Railroad Administration (FRA) awarded up to \$500,000 each to two Missouri rail projects under its Fiscal Year 2022 Corridor Identification and Development Program.¹¹ The Hannibal Extension proposes extending the existing Illinois Zephyr/Carl Sandburg route from Quincy, Illinois, to Hannibal, Missouri, enhancing connectivity to Chicago.

The Kansas City to St. Joseph Corridor aims to establish a new passenger rail link between Kansas City and St. Joseph, Missouri, with integration into the Missouri River Runner route to St. Louis. Additionally, this corridor is being studied to enhance service along the existing St. Louis to Kansas City line. Both the Hannibal and St. Joseph extension projects are under development.



Source: MoDOT

¹¹U.S. Department of Transportation, Federal Railroad Administration, FY22 Corridor Identification and Development Program Selections (February 26, 2025), <https://railroads.dot.gov/elibrary/fy22-cid-program-selections>.



2025 Connected Freight KC 2050 – A Plan in Action

The Kansas City region's MPO, the Mid-America Regional Council (MARC) completed their regional freight plan update in April 2025. MARC's plan explores the many impacts freight movement will have in the Kansas City region over the next 25 years and how local communities can manage these impacts. Connected Freight KC 2050 – A Plan in Action considers four critical issues in freight impacting the Kansas City region:

- Balancing rural and urban representation of freight needs, policies and project prioritization
- Harmonizing regional freight policies to elevate freight within the project selection process
- Providing resources to educate local governments on the expected impacts of freight development and goods movement
- Developing public policies that integrate land use and transportation planning reflective of the Kansas City region's geographic advantages

The report also describes seven planning goals of the document:

- Transportation Options and Economic Vitality
- Safety, Security and Resiliency
- Maintenance and Service
- Mobility and Reliability
- Public Health and Equity
- Environment and Energy Conservation
- Innovation

The plan was crafted with the input of MARC's Goods Movement Committee, a public forum for regional freight stakeholders to discuss critical issues facing their industry in the region.

Freight Organizations in Missouri

MoDOT participates in multiple freight planning organizations that play a vital role in planning, coordination and advocacy for the state's freight network. These organizations contribute to infrastructure development, policy recommendations and industry collaboration to enhance freight efficiency and economic competitiveness. This section provides an overview of these freight organizations, outlining their roles, initiatives and impact on the state's transportation system.

Freightway

The St. Louis Regional Freightway focuses on strengthening the region's freight infrastructure, enhancing global connectivity and supporting economic growth through strategic logistics development. Key goals include improving transportation access, advancing multimodal freight systems and fostering job creation in the manufacturing and logistics sectors. Strategies emphasize workforce development, investment in infrastructure projects and the promotion of the region as a hub for businesses in freight, logistics and distribution. Freightway works to align regional resources and stakeholders to boost the region's competitive edge in the global supply chain.



Mid–America Freight Coalition

The Mid-America Freight Coalition (MAFC) includes representatives from the 10 state Mid-America Association of State Transportation Officials (MAASTO) Department of Transportation (DOTs) and works to enhance freight movement across the region, focusing on efficient transportation strategies and innovation. Through MAFC, states analyze barriers to develop collaborative solutions. In Missouri, MAFC supports regional collaboration on infrastructure improvements, safety, economic growth, strengthening key trade corridors, addressing freight bottlenecks and improving multimodal connectivity. By aligning with regional stakeholders, the MAFC aims to provide reliable, safe and cost-effective movement of goods, benefiting both Missouri’s economy and broader regional supply chains. MAFC also acts as a resource to regional partners and stakeholders, through information sharing, connecting agencies to resources and providing a forum for discussion of freight related issues.

The Institute for Trade and Transportation Studies

The Institute for Trade and Transportation Studies (ITTS) is a non-profit state corporation that represents 10 states across the southeast US including Missouri. ITTS is dedicated to providing research, data and expert insights on the impact of commercial freight movements on infrastructure, transportation needs and safety. In Missouri, ITTS collaborates with regional stakeholders to enhance freight planning and operations. ITTS hosts annual conferences, workshops and peer exchanges and provides research and planning support to member states. Through these initiatives, ITTS plays a vital role in advancing freight transportation research and fostering collaboration among stakeholders in Missouri, contributing to the development of a more efficient and safe freight system. ITTS will cease operations at the end of 2025.

MoDOT Adopted Plans Shaping the SFRP

Truck Parking Investment for Missouri

The Truck Parking Investment for Missouri report was initially adopted as part of the 2022 State Freight and Rail Plan and continued to be developed through Truck Parking Investment studies in 2023 and updated in 2025. The Truck Parking report examines both existing inventory and projected need for both public and private truck parking in Missouri. Truck parking is a critical component to the over-the-road freight transportation system due to the regulatory environment and the general nature of the industry. There are five primary types of truck parking, each with their own set of challenges.



Source: MoDOT

The 2022 adopted plan found that there was a deficiency in the amount of parking needed for roadway freight haulers in Missouri. Across all districts there were about 1500 additional truck parking spots needed. The subsequent 2023 report recommended locations to construct truck parking in each district.



Connected and Autonomous Vehicles

MoDOT has not adopted statewide guidance nor a formal plan for Connected and Autonomous Vehicle considerations. Therefore, it is important that MoDOT stays updated with these rapidly evolving technologies both with freight vehicles and how they interact with MoDOT infrastructure in the physical and digital context. It is suggested MoDOT keeps current with policies and frameworks suggested through USDOT, FHWA, National Highway Traffic Safety Administration and USDOT Office of the Assistant Secretary for Research and Technology. FHWA guidance notes that freight Automated Driving Systems integration requires managing access to intermodal facilities and transfer yards, handling Automated Driving System (ADS) activation/deactivation and communicating freight-related network changes such as road geometry, bridge clearances, traffic diversions, or charging stations.¹² These highlight a few of the considerations regarding Connected and Autonomous Vehicle (CAV) in this plan and as MoDOT develops future CAV guidance.

Transportation Systems Management and Operations

MoDOT's Transportation Systems Management and Operations (TSMO) Program and Action Plan applies integrated strategies to optimize the performance of existing infrastructure through the implementation of systems, services real time information and programs designed to preserve capacity and improve the safety and reliability of transportation systems.¹³ The TSMO examines past and current efforts, plans and organizational structures of the previous iterations of the TSMO and where the TSMO is headed. The TSMO has a steering committee internal to MoDOT consisting of members of the Highway Safety and Traffic Division, Maintenance, Safety and Emergency Management, Information Systems and one or more district engineers as needed.

¹²U.S. Department of Transportation, Federal Highway Administration, Roadway Automated Driving Systems Integration – Concept of Operations for Transportation Agencies: Version 1, FHWA-HOP-22-052 (Washington, DC: Federal Highway Administration, 2022).

¹³Missouri Department of Transportation, Transportation Systems Management and Operations: Program and Action Plan (June 2024), <https://www.modot.org/sites/default/files/documents/2024%20MoDOT%20TSMO%20Program%20Plan.pdf>.

Missouri Highway – Rail Grade Crossing State Action Plan

With the passage of the 2015 Fixing America's Surface Transportation (FAST) Act, the USDOT required that all states create and implement a State Action Plan (SAP) to address highway-rail or pathway-rail crossings that have experienced crashes and identify specific strategies to improve safety in these locations. The Missouri Highway – Rail Grade Crossing State Action Plan is MoDOT's iteration of this plan and was last updated in 2022. Any highway-rail or pathway-rail crossings that have experienced at least one crash in the previous 3 years, more than one in the past five years, or are high-risk as defined by the plan, must be included in the State Action Plan. The plan has led to success in eliminating or improving rail crossings in Missouri, resulting in about 30 projects per year from 2017-2024. Missouri has 3,264 public at-grade crossings and 2,080 private at-grade crossings,¹⁴ underscoring the need to examine the safety of these crossings and make improvements where possible.

3,624

PUBLIC AT-GRADE CROSSINGS

2,080

PRIVATE AT-GRADE CROSSINGS



Source: MoDOT

¹⁴Federal Railroad Administration, FRA Crossing Inventory Data, downloaded April 23, 2025, <https://data.transportation.gov/stories/s/Crossing-Inventory-Listing/ejv6-cpdh/>.



Missouri State Airport System Plan Update

While not specifically focused on the movement of freight, the Missouri State Airport System Plan Update is critically important to the current and future state of the aviation sector in Missouri.¹⁵ Missouri is home to 120 public use airports, 107 of these are publicly owned, nine of which are commercial service for public use. These airports are essential to the state transportation infrastructure and are important to the state and local economy and the efficient movement of people and goods.

The 2019 Plan Update continued the work of the System Plan developed in 2017, by including a comprehensive data collection effort, forecasted future aviation needs in Missouri, an evaluation of the existing system, what roles individual airports play, understanding the state of existing airport facilities and how they are performing, anticipated costs for future aviation needs and the creation of a plan to address these critical needs.

Governor's Supply Chain Task Force

The Governors Supply Chain Task Force was created in 2021 by Governor Parson in response to the global supply chain issues caused by the COVID-19 pandemic.¹⁶ Understanding that Missouri's multimodal freight network plays a central role in the national supply chain, the Task Force set out to determine how the State should expand, maintain and protect the supply chain before and during a crisis.

The Task Force was made up of seven individuals from across Missouri, all leaders representing relevant private industry and State agencies. To help inform their work, the task force convened stakeholder meetings comprised of many other companies and organizations from across Missouri. The Task Force and stakeholders met seven times during 2022. The resulting report focused on three main areas: supply chain regulatory response during crisis, workforce challenges and barriers, Missouri freight assets, demand and performance and preparing Missouri for future trends and opportunities.

¹⁵Missouri Department of Transportation, Missouri State Airport System Plan Update, accessed November 10, 2025, <https://www.modot.org/aviation-general-information>.

¹⁶Missouri Department of Transportation, Governor's Supply Chain Task Force, accessed November 10, 2025, <https://www.modot.org/supplychaintaskforce>.

Chapter 3: Missouri's Freight System

Missouri's freight system is a critical driver of the state's economy, linking agricultural production, advanced manufacturing, distribution centers and global markets through its multimodal network. To assess how future business growth, site selection activity and commodity demand will shape this system, the consultant team engaged with the Missouri Department of Economic Development (MoDED), St. Louis Regional Freightway, Kansas City SmartPort (KC SmartPort) and Missouri Partnership. Input from these organizations was paired with quantitative analysis of 2023 Transearch data. Transearch, developed by S&P Global, is a comprehensive freight data system that integrates proprietary industry data, commodity flow data, public datasets and forecasts based on employment, output and consumption trends.¹⁷ From this dataset, district-level commodity flow results were developed to highlight variations in freight patterns across the seven MoDOT districts.

This combined approach provides both qualitative insight into Missouri's economic development priorities and quantitative evidence of how freight demand is likely to evolve. The following sections summarize:

- Business targeting and site selection trends, as identified by state and regional partners
- Freight generators and existing clusters that currently drive network demand
- Commodity and supply chain analysis based on Transearch
- District-level commodity flows, including projected cumulative and compound annual growth rate (CAGR) changes through 2050
- Network and corridor implications for Missouri's future freight system

¹⁷Adapted from S&P Global, "Transearch," accessed December 12, 2025, <https://www.spglobal.com/market-intelligence/en/solutions/products/transearch-freight-transportation-research>.



Freight-Based Business Targeting and Site Selection

Missouri's economic development partners are actively pursuing industries and business clusters that align with the state's freight strengths. Discussions with the St. Louis Regional Freightway, KC SmartPort, MoDED and Missouri Partnership revealed consistent emphasis on advanced manufacturing, agriculture, food and beverage, automotive, aerospace and emerging energy-related industries. Each organization also highlighted unique regional opportunities and site requirements that directly influence freight demand.

St. Louis Regional Freightway

St. Louis Regional Freightway identified agriculture exports, advanced manufacturing, aerospace, automotive and metals as priority clusters. Location quotient analysis confirms the region's competitive concentration of these industries. Infrastructure investments, such as port expansions, new grain crushing facilities and rail improvements along Hall Street, are expected to strengthen the export of soybeans, corn and related commodities, while positioning the region to compete for electric vehicle (EV) battery manufacturing.

KC SmartPort

KC SmartPort emphasized Kansas City's growing role as a hub for industrial manufacturing, food and beverage production, plastics, automotive components and batteries. The region benefits from Foreign Trade Zone status, which allows businesses to defer or reduce customs duties and streamline international trade processes, enhancing the region's competitiveness for global investment and export-oriented industries. Kansas City also benefits from relatively uncongested freight corridors and proactive partnerships with Union Pacific Railroad (UP) and Norfolk Southern Railway (NS) to expand intermodal access. Recent land acquisitions, including a 400-acre NS site and large tracts owned by UP, have added to the portfolio of rail-served industrial sites. Stakeholders also noted rising demand for automated "dark facilities," which are highly automated warehouses and production sites that operate with minimal human presence using only robotics and Artificial Intelligence (AI). These facilities are reshaping freight patterns by increasing throughput while shifting workforce needs toward more advanced technical and maintenance roles, further reinforcing Kansas City's position as a hub for next-generation logistics and industrial activity.

Missouri Department of Economic Development

The MoDED described a statewide strategy centered on transportation and defense, advanced materials, food and beverage, biotechnology and financial services. These clusters leverage Missouri's established strengths in raw materials, chemicals and value-added manufacturing while underscoring the importance of information technology (IT) and logistics as enabling industries. The state is also assessing "mega site" readiness, with utilities, four-lane highway access and rail connectivity identified as critical factors for attracting new large-scale employers.

Missouri Partnership

Missouri Partnership, which serves as the primary point of contact for site selectors (working directly with approximately 70% of prospects), confirmed ongoing interest in agricultural technology firms, food and beverage companies, metals and recycling operations and distribution centers. Companies consistently highlight requirements for reliable power supply, multilane highway access and major airport and workforce availability within one to two hours. While rail access is not universally required, firms seeking it are typically satisfied if new spurs can be delivered within a 12-month timeframe. Community amenities, including schools and childcare, were also cited as increasingly important for workforce attraction and retention.

Together, these perspectives highlight the close connection between Missouri's business attraction strategy and its freight system. Target industries not only depend on efficient multimodal connectivity but also drive investment in infrastructure that will shape long-term freight flows.



Source: MoDOT



Freight Generators and Existing Business Clusters

Missouri hosts a diverse set of freight-intensive industries that generate significant demand on the state’s multimodal network. These freight generators include both established industrial clusters and emerging facilities, which together influence commodity flows, modal requirements and corridor priorities.

- St. Louis Region:** The region’s freight activity is anchored by chemical manufacturing, food and beverage production and advanced aerospace and automotive facilities. Notable generators include Boeing, Anheuser-Busch InBev, General Motors and specialty chemical and plastics plants. America’s Central Port is developing new crushing facilities, while the Jefferson County Port is being considered for EV battery production due to its industrial zoning and proximity to critical minerals such as magnesium, nickel and copper.
- Kansas City Region:** The region’s freight activity is driven by major automotive assembly plants, data centers and large distribution hubs. Key generators include General Motors in Fairfax and Ford in Claycomo. Kansas City’s rail-served industrial sites and Foreign Trade Zone status enhance the region’s competitiveness for inbound components and outbound manufactured goods.
- Rural Areas:** Freight activity across rural Missouri is dominated by agricultural production. Grain, soybeans and other farm products move through processing facilities and river terminals, placing strong demand on highways, rail and inland waterways.

Table 11 summarizes prominent freight generators, associated commodities and possible modal requirements. These generators not only shape current network utilization but also provide insight into future infrastructure and capacity needs.

By mapping these freight generators to commodity flows and modal requirements, the analysis identifies both high-demand corridors and strategic opportunities for investment. These clusters serve as anchors for Missouri’s freight system while also signaling emerging areas of growth, such as EV battery production and advanced manufacturing, which will require targeted multimodal support.

Table 11 – Freight Generators, Industry Clusters and Modal Needs

| Freight Generator Industry/ Cluster | Primary Location(s) | Associated Commodities | Modal Needs |
|-------------------------------------|-------------------------------------|---|--|
| Aerospace Manufacturing | St. Louis Region | Aircraft parts and precision metals | Air cargo, truck and rail |
| Automotive Manufacturing | Kansas City (Fairfax) | Finished vehicles and inbound auto parts | Rail and truck |
| Automotive Manufacturing | Kansas City (Claycomo) | Finished vehicles and inbound auto parts | Rail and truck |
| Food & Beverage | St. Louis | Beverages and packaging materials | Truck, rail and cold chain (temperature controlled supply chain) |
| Agricultural Technology | Kansas City/ Statewide | Biotechnology inputs for crops | Truck and air cargo (research and development inputs) |
| Intermodal/Agribusiness | Granite City (Metro East, Illinois) | Grain, soy, fertilizer and industrial cargo | Barge, rail and truck |
| Port/Industrial | Jefferson County, Missouri | Agriculture products, metals and EV battery materials | Barge, rail and truck |
| Information/Logistics | Kansas City Region | Energy-intensive electronics hardware | Highway access, high-capacity power |
| Chemicals & Allied Products | St. Louis Region/ Statewide | Chemicals, plastics and allied materials | Rail, truck and pipeline |
| Logistics & Warehousing | St. Louis & Kansas City Metro Areas | Consumer goods, secondary traffic | Truck, rail (intermodal) |

Source: GFT Analysis of Transearch Data, 2023; Stakeholder Meetings (STL Freightway, KC SmartPort, MoDOT DED, Missouri Partnership, 2025)



Commodity and Supply Chain Analysis

District-level analysis of Transearch data confirms the central role of Missouri’s key industry clusters in shaping freight flows. Across the state, farm products, food and kindred products and nonmetallic minerals consistently rank among the top commodities by tonnage, reflecting the continued strength of agriculture and construction-related industries. By contrast, commodities with higher growth in value, such as chemicals, transportation equipment and secondary traffic, dominate in the Kansas City, St. Louis and Southwest districts, highlighting the expansion of advanced manufacturing and distribution hubs. Declines in petroleum and coal products are evident across multiple districts, aligning with broader national energy transitions.

Building on stakeholder input and commodity data, five supply chains emerge as critical to Missouri’s future freight system. These supply chains are summarized below. **Table 12** provides an analysis of each supply chain:



Agriculture Exports – Soybeans, corn and other grains flow through central and southeast Missouri farms and river ports. Dominant transportation modes include barge, rail and truck, with strong projected export growth requiring resilient river infrastructure.



Aerospace Manufacturing – Aircraft parts and precision metals generated by Boeing and its supplier network in the St. Louis region rely on air cargo, truck and rail. This high-value sector is expanding, with significant export potential.



Automotive Production – Finished vehicles and inbound auto parts from General Motors (GM), Ford and suppliers statewide are transported primarily via rail and truck. Long-term demand is stable, with particular emphasis on inbound logistics efficiency.



Chemicals and Allied Products – Concentrated mainly in St. Louis and statewide manufacturing clusters, these commodities are transported via rail, truck and pipeline. The sector is experiencing rapid growth and is essential to Missouri’s value-added manufacturing base.



Food and Beverage – Processed foods and beverages, including those from Anheuser-Busch and Pivot Bio, rely on truck, rail and refrigerated facilities. Demand remains high and underscores the importance of cold chain logistics—the temperature-controlled supply chain that promotes perishable goods, such as food and beverages, remain safe and high-quality from production through distribution.

These supply chains illustrate a balance between Missouri’s traditional economic base and targeted growth industries, providing a framework for understanding current and future freight demand. Promoting efficient multimodal connectivity across truck, rail, barge, pipeline and air travel will be essential to sustain investment, enabling competitiveness and supporting the state’s evolving economy.

Table 12 – Stakeholder Input Supply Chain Analysis

| Supply Chain | Key Commodities/Inputs | Primary Generators/Locations | Dominant Modes | Growth Outlook |
|-------------------------|---|--|---|---|
| Agriculture Exports | Soybeans, corn and grains | Central/Southeast MO farms; river ports | Barge, rail and truck | Strong export growth; requires river resiliency |
| Aerospace Manufacturing | Aircraft parts and precision metals | Boeing (St. Louis), supplier base | Air cargo, truck and rail | Expanding cluster; high-value exports |
| Automotive Production | Finished vehicles and auto parts | GM (KC), Ford (KC), suppliers statewide | Rail and truck | Stable long-term demand; focus on inbound parts logistics |
| Chemicals & Allied | Chemicals, refined products and plastics | St. Louis cluster; statewide producers | Rail, truck and pipeline | Rapid growth; essential to manufacturing |
| Food & Beverage | Processed foods, beverages and cold storage | Statewide producers; Anheuser-Busch; Pivot Bio (Ag Tech) | Truck, rail and refrigerated facilities | High demand; requires cold chain infrastructure |

Source: GFT Analysis of Transearch Data, 2023; Stakeholder Meetings (STL Freightway, KCSmartPort, MoDOT DED, Missouri Partnership, 2025).

District Level Commodity Flow Analysis

Commodity flow patterns vary across the seven MoDOT districts, reflecting differences in industrial activity, agricultural production, population density and multimodal freight infrastructure. To capture these variations, district-level analyses were developed using 2023 Transearch data.¹⁸ For each district, the analysis identifies the top five commodities by tonnage and by value, along with the projected percentage change between 2023 and 2043, reported as both the cumulative change and the CAGR. This approach provides a clear indication of current freight movement profiles and expected long-term shifts in demand.

¹⁸Transearch integrates public and proprietary sources—including the Surface Transportation Board’s Waybill Sample, Census Bureau commodity flow data and modal statistics—reconciled through a commodity-based freight demand modeling framework. The dataset represents modeled estimates rather than direct observations but is widely recognized as the industry standard for state and regional freight planning.





Source: MoDOT

Commodity classifications are reported using the Standard Transportation Commodity Code (STCC) system at the 2-digit level, which allows for consistent aggregation and comparison of commodity groups across districts and modes. This level of detail provides meaningful insights into dominant freight categories while avoiding over-fragmentation of the data.

Table 13 through **19** present district-specific commodity flow profiles. For each MoDOT district, the tables highlight the top five commodities by tonnage and value in 2023, along with the projected cumulative change and CAGR through 2043. These summaries illustrate both the current composition of freight movements and anticipated long-term shifts in demand at the district level. While the analysis provides a high-level overview, **Appendix G** contains more detailed district-level tables that expand the view to the top ten commodities by mode, offering additional insight into modal distributions and commodity-specific growth patterns.

While not specifically called out in the commodity flow profiles per district, a declassified discussion of military freight is included later in this chapter. Each MoDOT district supports military freight corridors that provide efficient travel within and through the state. The districts of Kansas City, Northwest, Central and St. Louis are home to key military installations that support the nation’s defenses. MoDOT consistently prioritizes maintaining these corridors in a state of good repair and expanding capacity to meet statewide and nationwide military operations.

Table 13 – Central District All Modes Freight Data; Top Commodities Ranked by 2023 Tonnage and Value with Projected 2043 Growth

| Tonnage | | | | Value | | | |
|---------|----------------------------|----------|-------|-------|------------------------------|----------|------|
| Rank | Commodity | % Change | CAGR | Rank | Commodity | % Change | CAGR |
| 1 | Nonmetallic Minerals | 41% | 1.7% | 1 | Food or Kindred Products | 28% | 1.2% |
| 2 | Farm Products | 26% | 1.1% | 2 | Farm Products | 23% | 1.0% |
| 3 | Food or Kindred Products | 30% | 1.3% | 3 | Secondary Traffic | 21% | 1.0% |
| 4 | Petroleum or Coal Products | -15% | -0.8% | 4 | Chemicals or Allied Products | 80% | 3.0% |
| 5 | Secondary Traffic | 22% | 1.0% | 5 | Transportation Equipment | 43% | 1.8% |

Source: GFT Analysis of Transearch Data, 2023.

Table 14 – Kansas City District All Modes Freight Data; Top Commodities Ranked by 2023 Tonnage and Value with Projected 2043 Growth

| Tonnage | | | | Value | | | |
|---------|--------------------------|----------|-------|-------|------------------------------|----------|------|
| Rank | Commodity | % Change | CAGR | Rank | Commodity | % Change | CAGR |
| 1 | Nonmetallic Minerals | 22% | 1.0% | 1 | Secondary Traffic | 17% | 0.8% |
| 2 | Coal | -80% | -7.7% | 2 | Transportation Equipment | 36% | 1.5% |
| 3 | Secondary Traffic | 21% | 1.0% | 3 | Food or Kindred Products | 37% | 1.6% |
| 4 | Food or Kindred Products | 37% | 1.6% | 4 | Misc. Mixed Shipments | 32% | 1.4% |
| 5 | Farm Products | 25% | 1.1% | 5 | Chemicals or Allied Products | 41% | 1.7% |

Source: GFT Analysis of Transearch Data, 2023.



Table 15 – Northeast District All Modes Freight Data; Top Commodities Ranked by 2023 Tonnage and Value with Projected 2043 Growth

| Tonnage | | | | Value | | | |
|---------|----------------------------|----------|-------|-------|------------------------------|----------|-------|
| Rank | Commodity | % Change | CAGR | Rank | Commodity | % Change | CAGR |
| 1 | Nonmetallic Minerals | 17% | 0.8% | 1 | Farm Products | 38% | 1.6% |
| 2 | Farm Products | 36% | 1.5% | 2 | Petroleum or Coal Products | -17% | -0.9% |
| 3 | Petroleum or Coal Products | -18% | -1.0% | 3 | Food or Kindred Products | 35% | 1.5% |
| 4 | Coal | -79% | -7.4% | 4 | Chemicals or Allied Products | 56% | 2.2% |
| 5 | Food or Kindred Products | 43% | 1.8% | 5 | Primary Metal Products | 46% | 1.9% |

Source: GFT Analysis of Transearch Data, 2023.

Table 16 – Northwest District All Modes Freight Data; Top Commodities Ranked by 2023 Tonnage and Value with Projected 2043 Growth

| Tonnage | | | | Value | | | |
|---------|------------------------------|----------|------|-------|------------------------------|----------|-------|
| Rank | Commodity | % Change | CAGR | Rank | Commodity | % Change | CAGR |
| 1 | Farm Products | 34% | 1.5% | 1 | Farm Products | 38% | 1.6% |
| 2 | Nonmetallic Minerals | 27% | 1.2% | 2 | Petroleum or Coal Products | -17% | -0.9% |
| 3 | Food or Kindred Products | 40% | 1.7% | 3 | Food or Kindred Products | 35% | 1.5% |
| 4 | Chemicals or Allied Products | 49% | 2.0% | 4 | Chemicals or Allied Products | 56% | 2.2% |
| 5 | Secondary Traffic | 31% | 1.4% | 5 | Primary Metal Products | 46% | 1.9% |

Source: GFT Analysis of Transearch Data, 2023.

Table 17 – Southeast District All Modes Freight Data; Top Commodities Ranked by 2023 Tonnage and Value with Projected 2043 Growth

| Tonnage | | | | Value | | | |
|---------|--------------------------------|----------|-------|-------|-----------------------------|----------|-------|
| Rank | Commodity | % Change | CAGR | Rank | Commodity | % Change | CAGR |
| 1 | Crude Petrol or Natural Gas | 1% | 0.0% | 1 | Crude Petrol or Natural Gas | 1% | 0.0% |
| 2 | Nonmetallic Minerals | 15% | 0.7% | 2 | Secondary Traffic | 20% | 0.9% |
| 3 | Farm Products | 23% | 1.0% | 3 | Farm Products | 21% | 1.0% |
| 4 | Petroleum or Coal Products | -21% | -1.2% | 4 | Petroleum or Coal Products | -24% | -1.4% |
| 5 | Clay, Concrete, Glass or Stone | 0% | 0.0% | 5 | Primary Metal Products | 51% | 2.1% |

Source: GFT Analysis of Transearch Data, 2023.

Table 18 – Southwest District All Modes Freight Data; Top Commodities Ranked by 2023 Tonnage and Value with Projected 2043 Growth

| Tonnage | | | | Value | | | |
|---------|------------------------------|----------|------|-------|------------------------------|----------|------|
| Rank | Commodity | % Change | CAGR | Rank | Commodity | % Change | CAGR |
| 1 | Nonmetallic Minerals | 8% | 0.4% | 1 | Secondary Traffic | 18% | 0.8% |
| 2 | Farm Products | 13% | 0.6% | 2 | Transportation Equipment | 51% | 2.1% |
| 3 | Food or Kindred Products | 42% | 1.8% | 3 | Food or Kindred Products | 40% | 1.7% |
| 4 | Secondary Traffic | 24% | 1.1% | 4 | Farm Products | 19% | 0.9% |
| 5 | Chemicals or Allied Products | 50% | 2.0% | 5 | Chemicals or Allied Products | 49% | 2.0% |

Source: GFT Analysis of Transearch Data, 2023.



Table 19 – St. Louis District All Modes Freight Data; Top Commodities Ranked by 2023 Tonnage and Value with Projected 2043 Growth

| Tonnage | | | | Value | | | |
|---------|----------------------------|----------|-------|-------|------------------------------|----------|-------|
| Rank | Commodity | % Change | CAGR | Rank | Commodity | % Change | CAGR |
| 1 | Nonmetallic Minerals | 13% | 0.6% | 1 | Secondary Traffic | 30% | 1.3% |
| 2 | Petroleum or Coal Products | -13% | -0.7% | 2 | Chemicals or Allied Products | 40% | 1.7% |
| 3 | Coal | -73% | -6.3% | 3 | Transportation Equipment | 39% | 1.7% |
| 4 | Farm Products | 19% | 0.9% | 4 | Petroleum or Coal Products | -14% | -0.8% |
| 5 | Secondary Traffic | 41% | 1.7% | 5 | Food or Kindred Products | 29% | 1.3% |

Source: GFT Analysis of Transearch Data, 2023.

Across the seven MoDOT districts, the commodity flow data reveals both commonalities and regional distinctions in freight demand. Several trends are evident:

- **Consistent Top Commodities by Tonnage:** Farm products, food and kindred products and nonmetallic minerals dominate, reflecting Missouri’s continued strength in agriculture and construction-related industries.
- **Value-Driven Growth:** Districts with strong manufacturing and distribution activity, including Kansas City, St. Louis and Southwest, show significant growth in chemicals, transportation equipment and secondary traffic, underscoring the role of these regions as industrial and logistics hubs.
- **Declining Sectors:** Petroleum and coal products decline across multiple districts, aligning with broader national energy transitions and shifts in regional consumption patterns.
- **Origin and Destination Flows:** These data highlight not only commodities produced within each district but also goods moving through the state to serve regional, national and international markets, providing insight into Missouri’s strategic freight corridors.

Together, these findings indicate that while Missouri’s freight network will continue to support its traditional strengths in agriculture and natural resources, future growth will be increasingly concentrated in higher-value manufacturing and distribution commodities. This underscores the importance of a freight system that balances bulk commodity movements with the infrastructure, multimodal connectivity and operational capacity required to support expanding value-added industries.

By linking district-level flows to supply chain priorities and business generators, these results inform corridor planning, multimodal investment strategies and targeted economic development initiatives. They provide a foundation for identifying Critical Urban and Rural Freight Corridors, prioritizing infrastructure improvements and aligning Missouri’s multimodal network with anticipated changes in freight demand through 2043.



Source: MoDOT



Key Freight Corridors

While district-level commodity flows highlight regional production and consumption patterns, truck freight activity in Missouri remains concentrated along a limited number of high-volume highway corridors that serve as the backbone of the state's multimodal freight network and support national defense mobility. I-44 and I-70 are Missouri's most heavily utilized freight corridors, carrying a significant share of all highway freight tonnage and value moving across the state. In 2023, each corridor supported more than 85 million tons of freight, a figure projected to grow by roughly 20-30% by 2043. This increase reflects Missouri's central position within national supply chains and the continuing importance of these east-west corridors for both regional and long-haul freight movements.

In terms of freight value, both I-44 and I-70 handle the highest-value shipments in the state, each with 2023 totals exceeding \$145 billion annually and projected to rise by more than 50% by 2043. These corridors play a critical role in linking major metropolitan centers, including St. Louis, Columbia, Springfield and Kansas City, to national markets and global gateways. Their strategic alignment along key manufacturing, distribution and logistics hubs underscores their role in supporting Missouri's economic competitiveness.

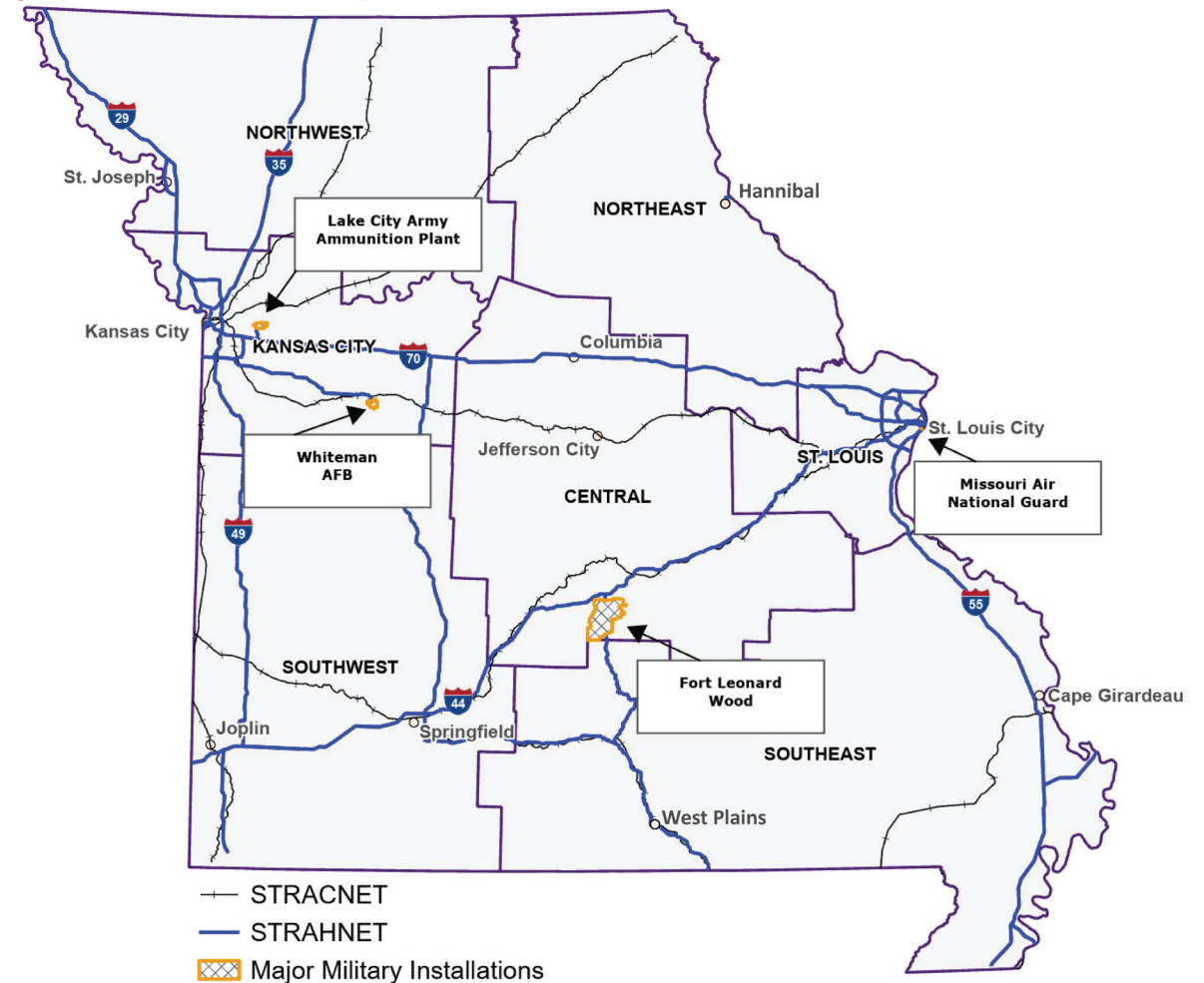
Other important freight routes, including I-55, I-57 and I-270, complement the function of I-44 and I-70 by facilitating north-south movements and regional connectivity. I-55 and I-57 provide vital access to southern markets and Gulf Coast ports, while I-270 serves as a major circumferential route supporting intermodal transfers and urban freight distribution in the St. Louis region. These corridors are projected to see moderate but steady growth in both tonnage and value, reflecting their importance to regional supply chains and last-mile distribution.

Collectively, Missouri's top highway freight corridors form the structural foundation of the state's multimodal transportation system. Anticipated increases in both tonnage and value by 2043 highlight the importance of maintaining corridor reliability, addressing congestion at key urban interchanges and advancing targeted capacity and safety improvements to continue supporting efficient and resilient freight movement statewide.

Military Freight

MoDOT coordinates with the USDOT, the FRA, the FHWA and the U.S. Department of Defense's U.S. Transportation Command (USTRANSCOM) to support key facilities and corridors that support military readiness and deployment operations.

Figure 4 – Missouri Military Facilities



Source: Missouri Spatial Data Information Service.

Missouri's multimodal freight system supports multiple military facilities shown in **Figure 4**, including:

- Fort Leonard Wood (United States [U.S.] Army Training and Maneuver Center)
- Whiteman Air Force Base (U.S. Air Force Global Strike Command)
- Lake City Army Ammunition Plant
- Missouri Air National Guard facilities in St. Joseph and St. Louis
- Naval Operational Support Center (NOSC) Kansas City (not shown)
- USTRANSCOM and Air Mobility Command located at Scott Air Force Base, Illinois, which relies on Missouri's transportation infrastructure for deployment support (not shown)



In addition to installations, key transportation assets identified by USTRANSCOM within and adjacent to Missouri include the Strategic Highway Network (STRAHNET), Strategic Rail Corridor Network (STRACNET) and strategic airports and seaports that facilitate defense logistics. These networks, described below, collectively allow Missouri to support both origin and pass-through military cargo movements essential for national readiness.

Strategic Highway Network

Missouri contains several Strategic Highway Network (STRAHNET) routes that link major military installations to the Interstate system. These include I-44 (connecting Fort Leonard Wood to St. Louis and Tulsa), I-70 (east-west corridor connecting Kansas City, Columbia and St. Louis) and I-49 (north-south corridor providing access from Fort Leonard Wood to western deployment points). These corridors accommodate heavy and oversized military equipment, such as armored vehicles, which require special permitting and route coordination.

Strategic Railway Corridor Network

Missouri's rail network includes several Strategic Railway Corridor Network (STRACNET) routes that are essential for the rapid deployment of military equipment and supplies. These corridors provide connectivity between military installations and key ports, depots and mobilization centers across the U.S. STRACNET within Missouri includes portions of major Class I railroads, such as UP, BNSF Railway and Canadian Pacific Kansas City. These routes provide critical east-west and north-south linkages for military freight transiting through or originating in Missouri.

Missouri's STRACNET facilities connect directly with military installations, including Fort Leonard Wood and Whiteman Air Force Base. Rail access to these installations facilitates the transport of heavy military vehicles, training equipment and supplies. Additionally, STRACNET routes intersect with key intermodal terminals and freight yards that provide transfer capabilities between modes, enhancing the efficiency of defense logistics operations.

MoDOT has incorporated FRA's guidance into its rail planning process by identifying STRACNET segments on the State Rail Map. Consideration of military freight needs has been integrated into long-range rail investment strategies, so these corridors remain reliable, resilient and capable of handling future defense mobility demands. This includes maintaining weight limits, bridge conditions and clearance restrictions along STRACNET corridors meet federal standards for military loadings.

Airports and Inland River Ports

Missouri's three major commercial airports – Kansas City International (MCI), St. Louis Lambert International (STL) and Springfield-Branson National Airport (SGF) – provide cargo handling capabilities that may be used in support of defense logistics. Additionally, the Mississippi River port in St. Louis and the Missouri River port in Kansas City are strategically positioned for barge transport of military goods, providing alternative multimodal deployment options.



Coordination and Planning

Military freight, like other types of freight, may pass through Missouri's transportation network without originating or terminating within the state. Therefore, MoDOT considers both through traffic and local military shipments when planning infrastructure improvements. The agency coordinates regularly with federal partners and neighboring states to support corridors providing defense mobility by providing well-maintained infrastructure and addressing bottlenecks or infrastructure constraints.

MoDOT's freight planning process includes consultation with the Department of Defense Surface Deployment and Distribution Command (SDDC), now known as the U.S. Army Transportation Command (ARTRANS) and U.S. Transportation Command (USTRANSCOM), as well as with installation transportation offices. These partnerships help planned infrastructure projects, such as bridge rehabilitations or interchange improvements, consider military load and clearance requirements.



Network and Corridor Implications

The synthesis of district-level commodity flows, supply chain priorities and stakeholder input highlights several strategic priorities for Missouri's multimodal freight network. Key findings include:



Critical Corridors: I-70 and I-44 consistently emerge as vital arteries for both high-tonnage agricultural and construction commodities and high-value manufactured goods. These corridors require ongoing capacity enhancements, modernization and safety improvements to accommodate projected growth.



Inland Waterways: The Mississippi and Missouri Rivers remain a comparative advantage for bulk commodity movements, particularly agricultural exports. Stakeholders emphasized the importance of resiliency measures, such as levee maintenance, flood mitigation and innovative tools like digital twins to monitor water levels and optimize cargo flows.



Rail Connectivity: Rail access continues to differentiate manufacturing and distribution hubs. Class I congestion, particularly in St. Louis, highlights the need for additional rail spurs, improved dispatching and coordination with private operators to support chemical, automotive and high-value cargo flows.



Urban and Rural Priorities: Urban areas require targeted investments to connect major industrial hubs, including Boeing, GM and intermodal terminals, to the broader freight network. In rural areas, infrastructure should support agricultural production, processing facilities and emerging industries, such as EV battery manufacturing near Rolla and in Jefferson County.



Multimodal Integration: The District-level commodity data underscores the need for seamless modal transitions among truck, rail, barge, pipeline and air cargo. Investments should prioritize connectivity that supports both high-volume bulk commodities and smaller, high-value goods.



Military Freight: Missouri's freight transportation system plays a critical role in supporting national defense and the movement of military freight, personnel and oversized vehicles. The state's location at the geographic center of the nation, combined with its robust highway, rail, air, waterways and military installations makes it vital for military logistics.

By aligning corridor improvements with high-growth supply chains, freight generators and district-level commodity flows, Missouri can enhance network reliability, reduce congestion and maintain competitiveness in national and global markets. Overall, this analysis demonstrates that strategic infrastructure investment, multimodal integration and freight-responsive planning will be essential to accommodate projected shifts in commodity flows and support Missouri's targeted economic growth through 2043.

Freight Implications

Across Missouri's districts, the commodity flow data reveals both shared patterns and regional distinctions in freight demand. Farm products, food and kindred products and nonmetallic minerals consistently rank among the top commodities by tonnage, highlighting the enduring importance of agriculture and construction-related industries. In contrast, districts with strong manufacturing and distribution activity, such as Kansas City, St. Louis and Southwest, show notable growth in chemicals, transportation equipment and secondary traffic, reflecting their roles as industrial and logistics hubs. Declines in petroleum and coal products are observed across multiple districts, consistent with broader national energy transitions. Stakeholder feedback underscores the importance of multimodal access, reliable power and supportive community infrastructure for site selection and business expansion.

These district-level results capture both origin and destination flows, encompassing commodities produced within Missouri as well as goods moving through the state's corridors to serve regional, national and international markets. While Missouri's freight network will continue to support its traditional strengths in agriculture and natural resources, future growth is expected to concentrate in higher-value manufacturing and distribution commodities. This underscores the need for a freight system that balances bulk commodity movements with multimodal connectivity, infrastructure resilience and operational capacity to support expanding value-added industries.

Missouri also serves oversized and overweight military freight to move equipment, supplies and personnel, providing a system that promotes the movement of interstate commerce and national defense. By integrating targeted business attraction strategies, freight generator analysis, supply chain prioritization and corridor planning, Missouri can position its multimodal network to sustain economic competitiveness, attract new investment and respond effectively to evolving national and global freight demand.



Chapter 4. Condition and Performance

The condition and performance of Missouri's multimodal freight system plays a vital role in supporting the state's economy, linking producers to markets and connecting communities to the global supply chain. As a central hub in the national freight network, Missouri supports the movement of goods across highways, railroads, inland waterways and air cargo facilities. This chapter presents a comprehensive analysis of the condition, reliability and safety of the freight transportation system across all modes.

The analysis evaluates physical infrastructure conditions, bottlenecks, level of service (LOS), safety performance and system constraints that influence freight mobility. It draws from state and federal data sources, stakeholder interviews and prior planning efforts. This data is measured against the goals, objectives and performance measures detailed in **the Goals, Objectives and Performance Metrics chapter** to assess the freight transportation system.

Scope and Data Sources

This chapter synthesizes findings from a variety of sources, including but not limited to:

- S&P Global's Transearch database
- Surface Transportation Board waybill data
- FHWA Freight Bottleneck Tool
- MoDOT Tracker performance system
- MoDOT's Highway-Rail Grade Crossing State Action Plan (SAP)
- United States (U.S.) Army Corps of Engineers (USACE) waterway data
- U.S. Coast Guard (USCG) marine safety records
- Stakeholder input

All data reflects the most recent available reporting (2020-2024) and is organized by freight mode. All Transearch data is reported in 2023 numbers or 2043 projections.

Freight System Overview

Missouri's freight network spans four primary transportation modes: highways, rail, inland waterways and air cargo. Together, these modes form a cohesive and competitive freight system with modal flexibility for shippers and receivers.

- **Highways:** Missouri's highway network includes over 33,000 miles of state-owned roads with critical freight corridors, such as Interstates 70, 44, 29, 55 and 49, forming the backbone of truck freight movement. Missouri is home to 1,521 miles of the National Highway Freight Network (NHFN).
- **Railroads:** The state is served by five Class I railroads, multiple short line railroads and major intermodal terminals. These rail assets link at hubs in St. Louis and Kansas City to provide nationwide connectivity and direct access to seaports on all three coasts, in addition to Mexico and Canada.
- **Waterways:** Missouri boasts 1,050 miles of navigable waterways, including segments of the Mississippi and Missouri Rivers and is home to 19 public port authorities and one port commission. Missouri's ports also provide multimodal connectivity via roadway and rail links.
- **Air Cargo:** While Missouri's air cargo footprint is smaller than its surface modes, it is an essential transportation means for high-value and time-sensitive freight. Airports in St. Louis (STL), Kansas City (MCI) and Springfield (SGF) provide commercial air cargo service, while several regional and business airports offer specialized logistics support.

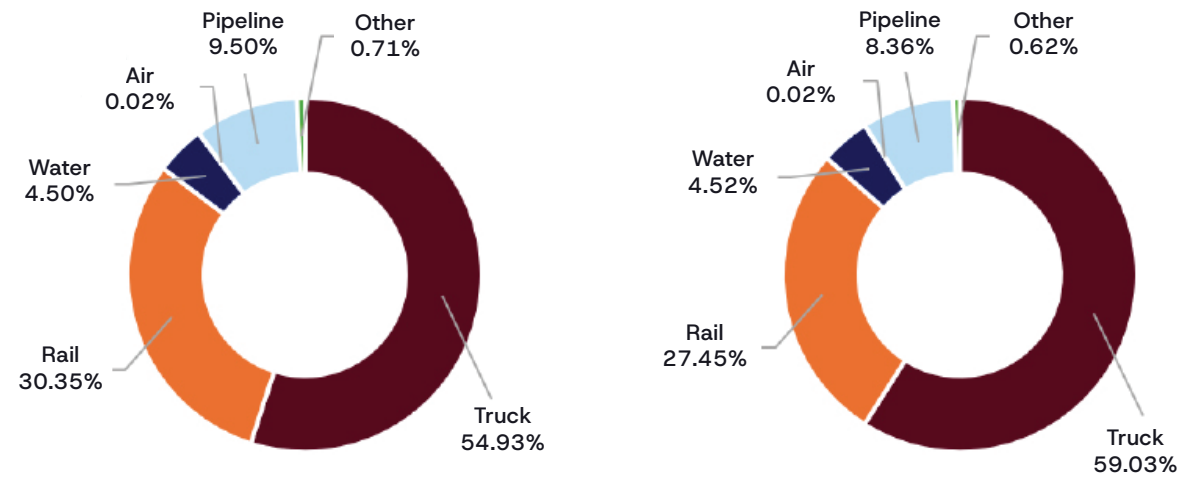
More than 1.1 billion tons of freight were shipped to, from or within Missouri in 2023 and volumes are expected to grow to 1.30 billion tons by 2043, with 2023 and 2043 freight values of \$1.70 trillion and \$2.30 trillion, respectively.¹⁹ Whether by rail, truck, barge or air cargo, these networks not only sustain key industries but also support tens of thousands of jobs in logistics, warehousing and operations. The 2023 and forecasted 2043 modal split by tonnage and value is shown in **Figure 5** and **Figure 6**.



¹⁹Data from Transearch (2023), calculations by GFT (2025).

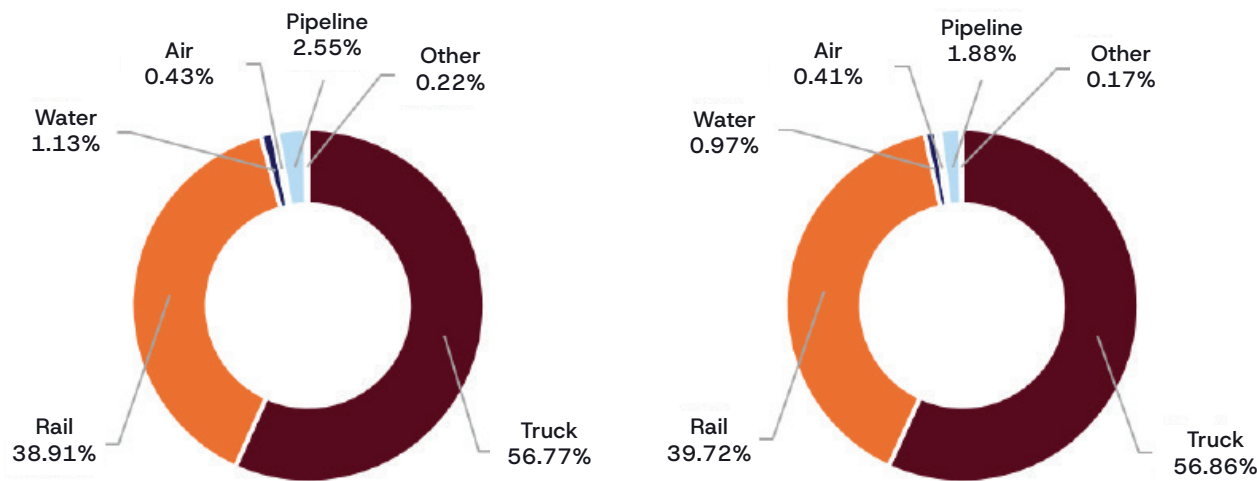


Figure 5 – Modal Split by Tonnage, 2023 (left) and 2043 (right)



Source: GFT Analysis of Transearch Data, 2023.

Figure 6 – Modal Split by Value, 2023 (left) and 2043 (right)



Source: GFT Analysis of Transearch Data, 2023.

Highway

Highways form the backbone of Missouri’s freight system, carrying the majority of goods by tonnage and value. Highways also link the state’s producers, consumers and distribution centers to regional, national and global markets. Missouri contains over 5,500 miles of major highways, more than 18,000 miles of minor highways and over 10,000 bridges on the state

highway system. Despite significant investments, recurring congestion, pavement deterioration and truck parking shortages remain challenges that impact reliability and safety. This section reviews highway system conditions, identifies freight bottlenecks using national datasets, such as the FHWA Freight Bottleneck Tool and evaluates safety, crash data and performance metrics to assess how well Missouri’s highway network is serving freight needs.

Overview

Missouri has the seventh largest state highway system in the U.S., totaling 33,814 centerline miles. Each day, 80.80 million miles are driven and 1.50 million tons of freight are hauled on this system.²⁰ Missouri’s state highway network is divided into major routes, minor routes and low-volume routes. Major highways, which include interstates, comprise 5,555 miles, or 16% of the total 33,814 highway miles in Missouri, but account for 77% of the system’s traffic. Part of the state system includes the NHFN that is essential for long-haul freight movement, as well as last-mile connectivity to rail terminals, ports and airports as shown in **Figure 7**.

The St. Louis Regional Freightway developed the St. Louis Regional Needs Analysis and Freight Development Plan in 2017. This study evaluated the freight-related role of roadway assets beyond the interstate system, identifying important freight corridor segments. The corridors are classified as Freight Connectors, Intra-Regional Connectors and Emerging Connectors, totaling 112 segments regionwide.

This plan complements the SFRP by focusing on the non-interstate roadway connections that support and enhance access to key freight assets, such as intermodal rail yards and ports. Together, they provide a more comprehensive view of the multimodal freight network.

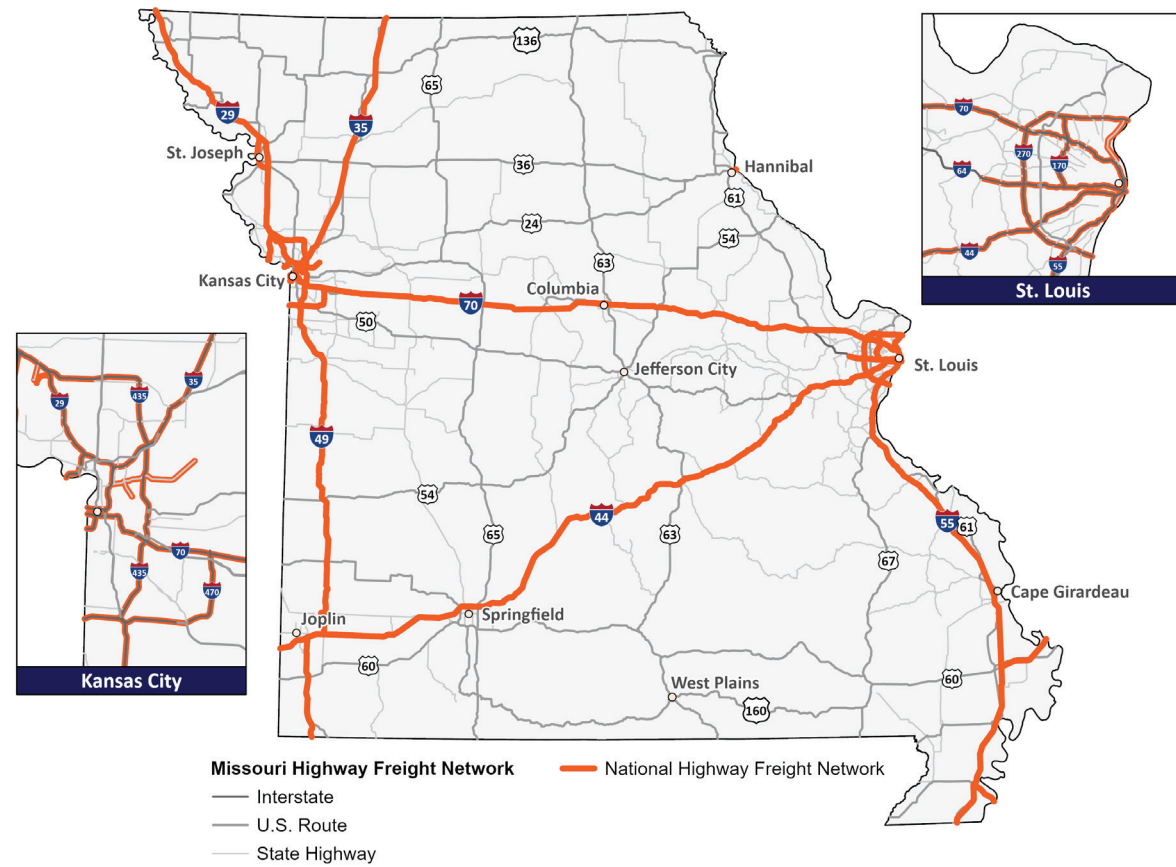


Source: MoDOT

²⁰FHWA, “Table VM-2 – Highway Statistics 2023,” Policy Information, accessed June 20, 2025, <https://www.fhwa.dot.gov/policyinformation/statistics/2023/vm2.cfm>.



Figure 7 – Missouri Highway and National Highway Freight Networks

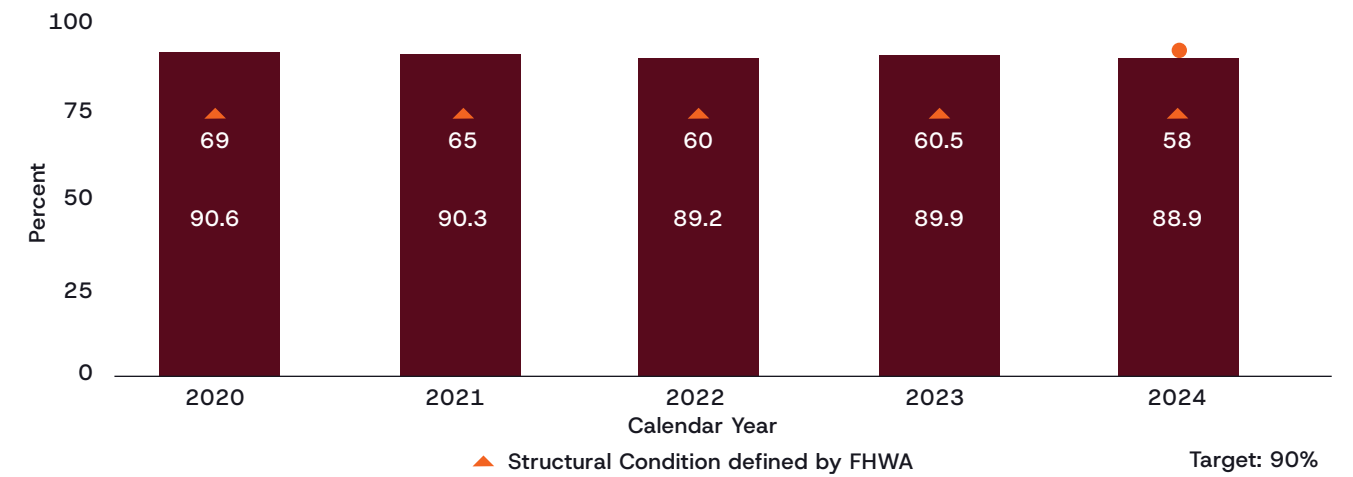


Source: FHWA, 2025.

Level of Service

Missouri’s state highway system is generally in good condition. Since 2021, major highways in good condition decreased from 90 to 89%, slightly below the state target of 90% (see **Figure 8**). Recently passed legislation to increase funding for interstate improvements is likely to increase major highway conditions to exceed the state target in coming years.

Figure 8 – Percent of Major Highways in Good Condition, 2020–2024



Source: MoDOT, Condition of State Highways - 5c, 2025.

From a level of service (LOS) perspective, Missouri’s highways continue to experience congestion and reliability issues despite relatively strong pavement conditions. High truck volumes on interstates and at key interchanges reduce efficiency and increase travel times, particularly in urban areas. First- and last-mile connections to ports, rail terminals and airports also experience localized bottlenecks. While recent improvements have addressed some of these constraints, growth in e-commerce and freight demand is expected to put additional strain on highway capacity, underscoring the need for continued monitoring and targeted investments.

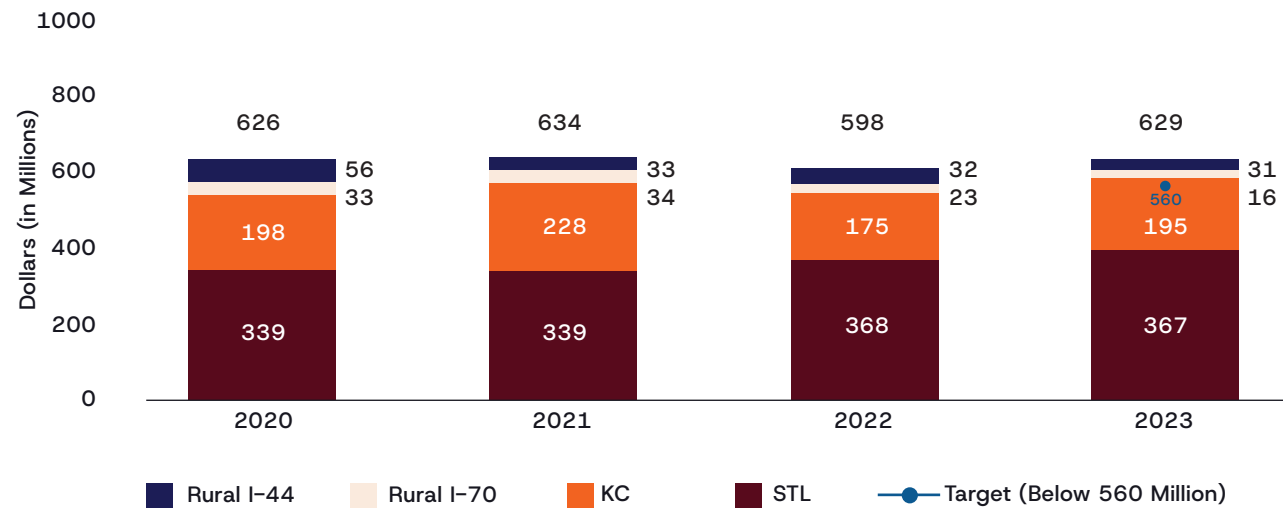
St. Louis and Kansas City are two major freight centers in Missouri that experience the most congestion in the state. The state target is no more than 10 additional minutes of travel time during peak rush hour conditions. For the third quarter of 2025, the most recent Missouri Tracker reliability data, St. Louis reported the morning peak was 8 seconds less and the evening peak was 40 seconds greater than peak targets. In Kansas City, the morning peak was 8 seconds greater and the evening peak was 57 seconds greater than peak targets.²¹

Congestion has financial costs that are passed on to drivers and consumers. In 2023, the estimated cost of congestion in St. Louis, Kansas City and rural I-70 and I-44 freight corridors was \$629 million, surpassing the statewide target by \$69 million. The total cost of congestion saw a large increase from 2022, as seen in **Figure 9**, returning to levels previously seen in 2020 and 2021.

²¹MoDOT, “Reliability on Major Routes -4a,” accessed October 2, 2025, <https://www.modot.org/reliability-major-routes-4a>.



Figure 9 – Cost of Congestion on Selected State Roads, 2020–2023



Source: MoDOT, *Cost and Impact of Traffic Congestion -4b*, 2025.

While peak congestion is predictable, there is unplanned congestion that also impacts reliability of the state highway system. Traffic incidents lock travel lanes and temporarily reduce the number of vehicles that can travel on the road. Traffic crashes are the most impactful source of unplanned congestion. Two major freight corridors, I-70 and I-44, have higher than expected crash rates, indicating a need for improvements.

The speed of incident clearance is essential to the highway system returning to normal conditions and improving the reliability of the system. Delays on the highway network can lead to missed intermodal connections, scheduling conflicts or cascading disruptions throughout the freight system.

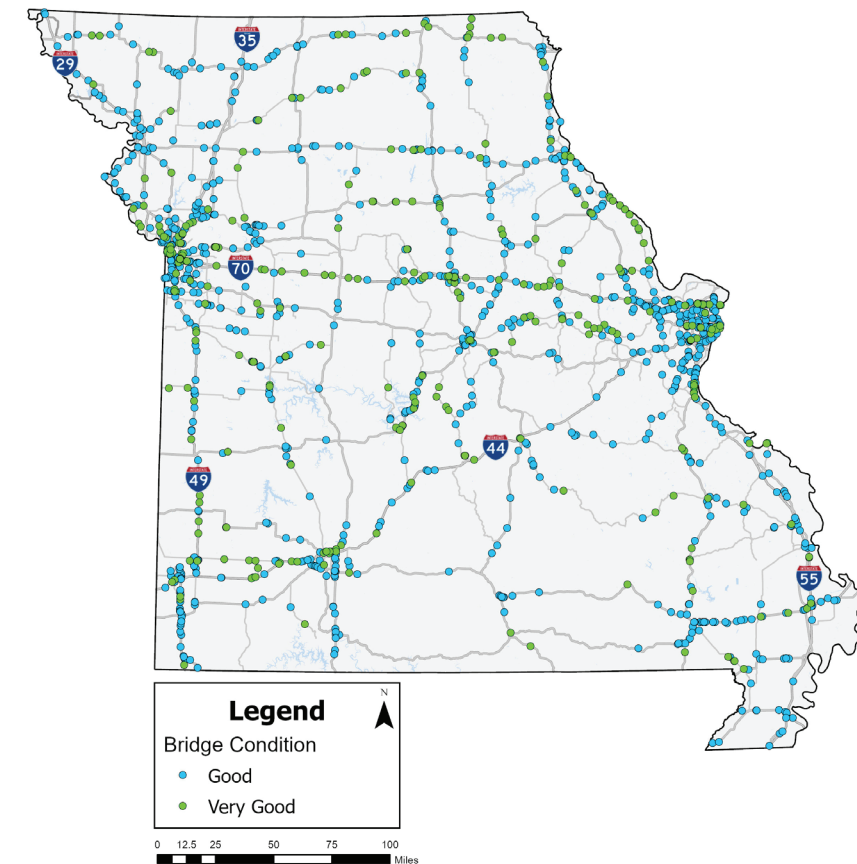
To monitor and improve this aspect of system performance, MoDOT tracks trends in incident clearance. One key performance measure tracked by MoDOT is how quickly MoDOT and emergency responders remove obstructions and restore normal operations.²² MoDOT set targets on average time to clear incidents, which account for the number of incidents and the actual time to clear. The 2024 actual average clearance times for St. Louis (28.40 minutes), Kansas City (30.40 minutes) and Springfield (33.50 minutes) were slightly higher than the targets, which range from 25.00 to 29.60 minutes. In contrast, the actual clearance times for rural I-70 (72.20 minutes) and rural I-44 (85.10 minutes) were much higher than the target clearance time of 60 minutes.

²²MoDOT, "Average Time to Clear Traffic Incidents -4c," accessed October 2, 2025, <https://www.modot.org/average-time-clear-traffic-incidents-4c>.

Bridges

In addition to the huge network of highways, Missouri has 10,427 bridges and culverts of varying sizes, including 209 major bridges that are longer than 1,000 feet. In 2024, the average bridge age in Missouri was 50 years. From 2019 to 2024, the number of bridges in poor condition was reduced from 8.6% to 7.2%.²³ This improvement from 2019 to 2024 reflects investments made through MoDOT’s asset management program and the Governor’s Focus on Bridges program. To combat aging infrastructure, MoDOT has a target of no more than 900 bridges being in poor condition. **Figure 10** shows the location of Missouri bridges in good or very good condition, while **Figure 11** shows the location of Missouri bridges in fair, poor or very poor condition.²⁴

Figure 10 – Missouri Bridges in Good or Very Good Condition



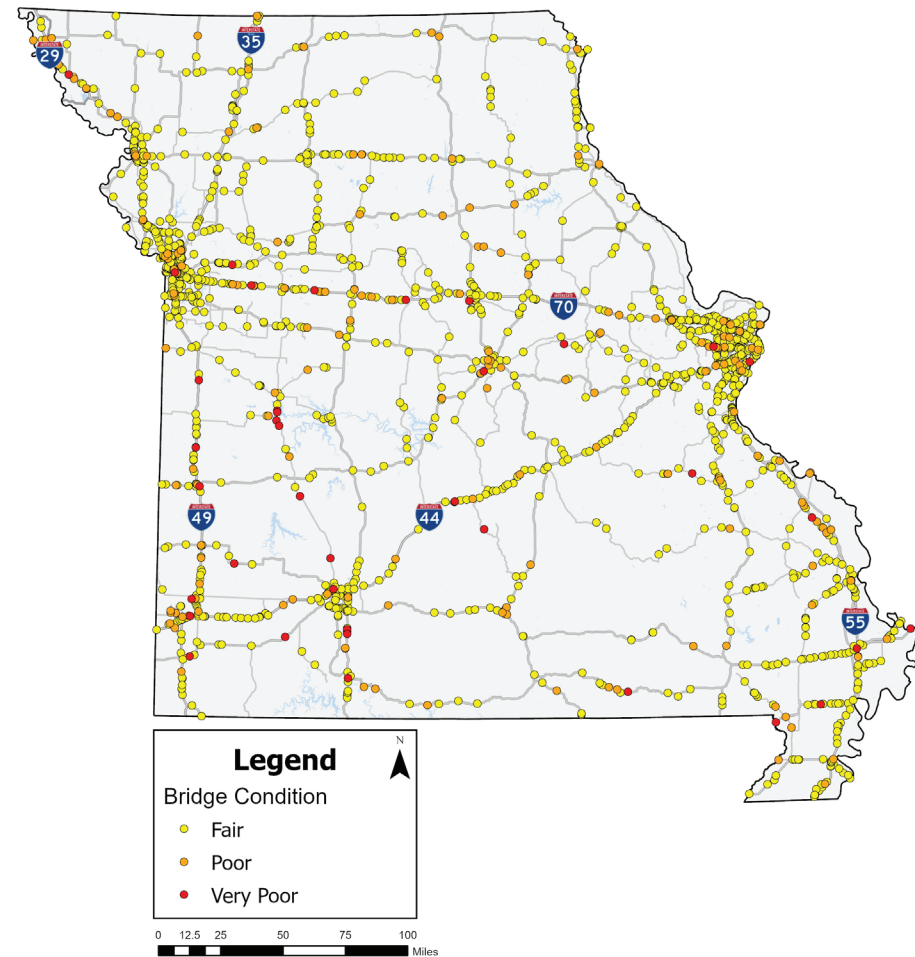
Source: MoDOT Bridge Dataset, 2025.

²³MoDOT, "Condition of State Bridges -5a," accessed June 5, 2025, <https://www.modot.org/condition-state-bridges-5a>.

²⁴Both figures exclude bridges without ratings.



Figure 11 – Missouri Bridges in Fair, Poor or Very Poor Condition



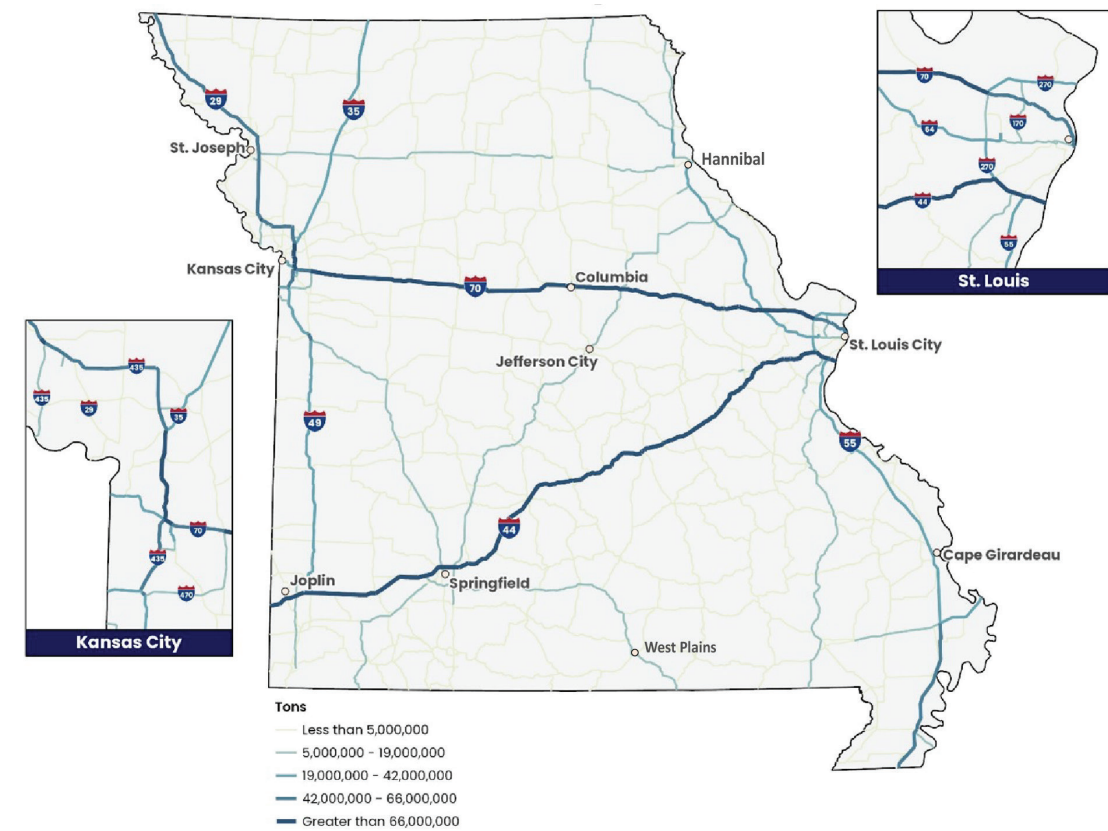
Source: MoDOT, Bridge Dataset, 2025.

The performance of all state bridges is important to review versus those only on the National Highway System (NHS) or NHFN due to the importance of agriculture to the state and the significant barrier a weight-posted or closed bridge can have on freight movements. Bridges in poor or very poor condition often have weight limit postings to maintain safety while avoiding closing the structure. Weight-limited bridges require farmers to choose between making more trips with lighter loads to market or taking detours to travel on roads with no load-posted bridges. Both options increase the farmers' transportation cost and lower available profits.

Truck Freight

The state's central location and extensive highway network make it a critical crossroad for long-haul freight moving east-west and north-south across the country. More specifically, truck movements account for 55% of the total freight tonnage and are forecasted to increase to 59%, from 624 million in 2023 to 765 million in 2043.²⁵ **Figure 12** shows the state's 2023 cargo flows and **Figure 13** shows the 2023 top five truck freight commodities by tonnage.

Figure 12 – Truck Cargo Flows, 2023

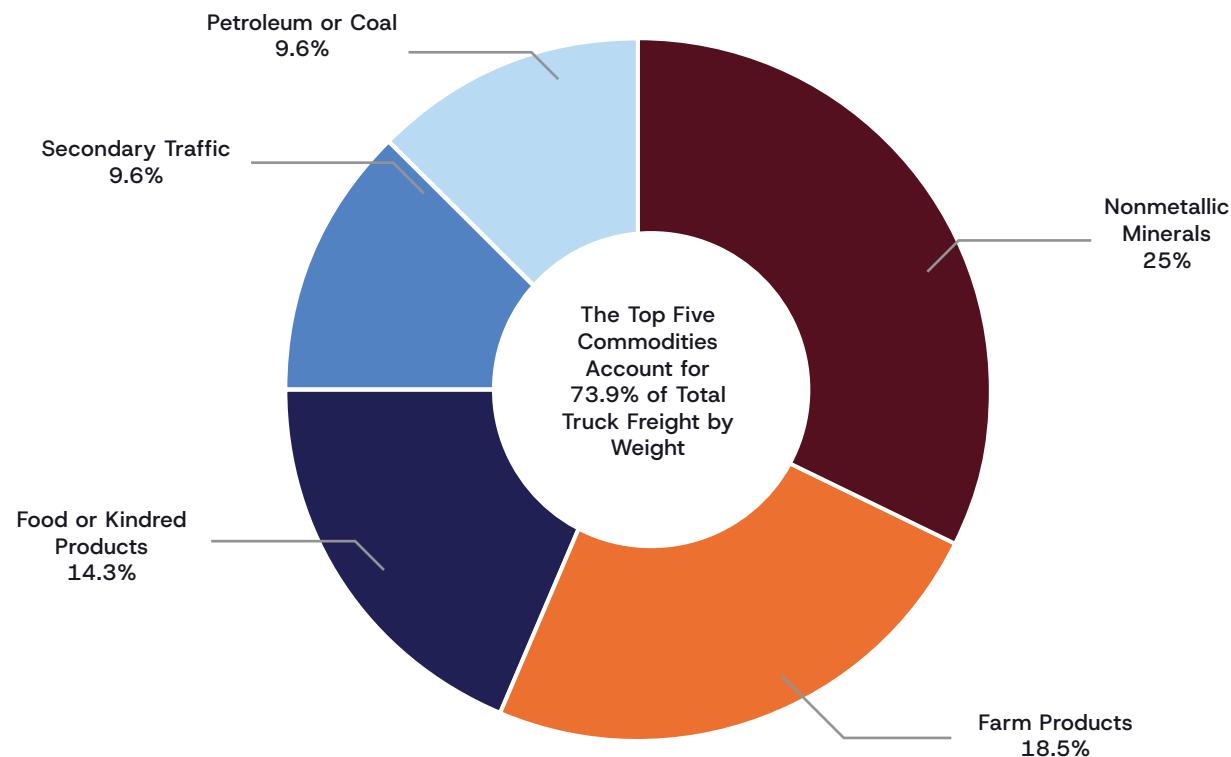


Source: GFT Analysis of Transearch Data, 2023.

²⁵Transearch, 2023.



Figure 13 – Top Five Commodities by Weight (Percent) for Truck Freight, 2023



Source: GFT Analysis of Transearch Data, 2023.

Bottlenecks

The American Transportation Research Institute (ATRI) publishes an annual report evaluating the top truck bottlenecks. The evaluation methodology involves comparing an assumed free-flow speed of 55 mph to the measured truck speed, then multiplying the difference by the hourly vehicle volume to obtain an hourly freight congestion value. The total freight congestion value is the summation for 24 hours in the day. Missouri has two locations listed in the top 100 truck bottlenecks: I-64/I-55 at I-44 in St. Louis and I-70/I-670 at U.S. 71 in Kansas City. While informative, the congestion value does not measure reliability, a key factor for freight shippers when planning routes for cargo.

The FHWA measures bottlenecks through six different indicators. The industry standard for measuring freight bottlenecks is the Truck Reliability Index (TRI), which compares the 95th percentile travel time to the 50th percentile travel time for specific times of the day.²⁶ The

²⁶Truck Reliability Index is also known as Truck Travel Time Reliability Index (TTTRI).

TRI scores begin at one, indicating a perfectly reliable system and scores greater than one indicating an unpredictable system. However, reliability does not indicate free-flow traffic. For example, a roadway can be heavily congested, but if it is consistent and predictably congested, it will have a favorable TRI score. **Figure 14** shows Missouri NHS segments included in the top 100 bottleneck locations based on TRI scores. **Table 20** lists the top 10 bottlenecks with congestion cost and Freight Analysis Framework (FAF) commodity values. A full list of the top 100 bottlenecks is included in **Appendix A**.

Figure 14 – Missouri National Highway System Segments with Top 100 Truck Reliability Index Scores



Source: GFT Analysis of FHWA Bottleneck Tool, 2025.



Table 20 – Top 10 Truck Reliability Index Bottlenecks on the National Highway System in Missouri

| Rank | Truck Reliability Index Value | Roadway | District | Congestion Cost | Freight Analysis Framework Value |
|------|-------------------------------|----------|-------------|-----------------|----------------------------------|
| 1 | 3.16 | I-670 | Kansas City | \$2.4M | \$28.2B |
| 2 | 2.33 | U.S. 169 | Northwest | \$1.4M | \$1.2B |
| 3 | 2.22 | I-64 | St. Louis | \$4.5M | \$29.2B |
| 4 | 2.08 | U.S. 169 | Northwest | \$1.8M | \$1.2B |
| 5 | 2.07 | U.S. 61 | St. Louis | \$0.2M | \$0.4B |
| 6 | 1.89 | I-70 | Kansas City | \$5.1M | \$44.1B |
| 7 | 1.82 | I-270 | St. Louis | \$2.5M | \$32.5B |
| 8 | 1.77 | U.S. 40 | Kansas City | \$0.1M | \$0.4B |
| 9 | 1.77 | U.S. 50 | St. Louis | \$0.1M | \$2.2B |
| 10 | 1.72 | MO-72 | Southeast | \$0.1M | \$1.1B |

Source: GFT Analysis of FHWA Bottleneck Tool, 2025.

FHWA tracks interstate truck travel through its Truck Travel Time Reliability Index (TTTRI), with each state establishing a two- and four-year target and a goal of all states trending to a value of 1.00.²⁷ Missouri has a target TTTRI of 1.45, with the most recently reported TTTRI of 1.23 in 2022 compared to 1.30 in 2019. Based on this metric, Missouri’s interstates are more reliable than Illinois, Oklahoma, Tennessee and Kentucky, while slightly less reliable than Iowa, Nebraska, Kansas and Arkansas.

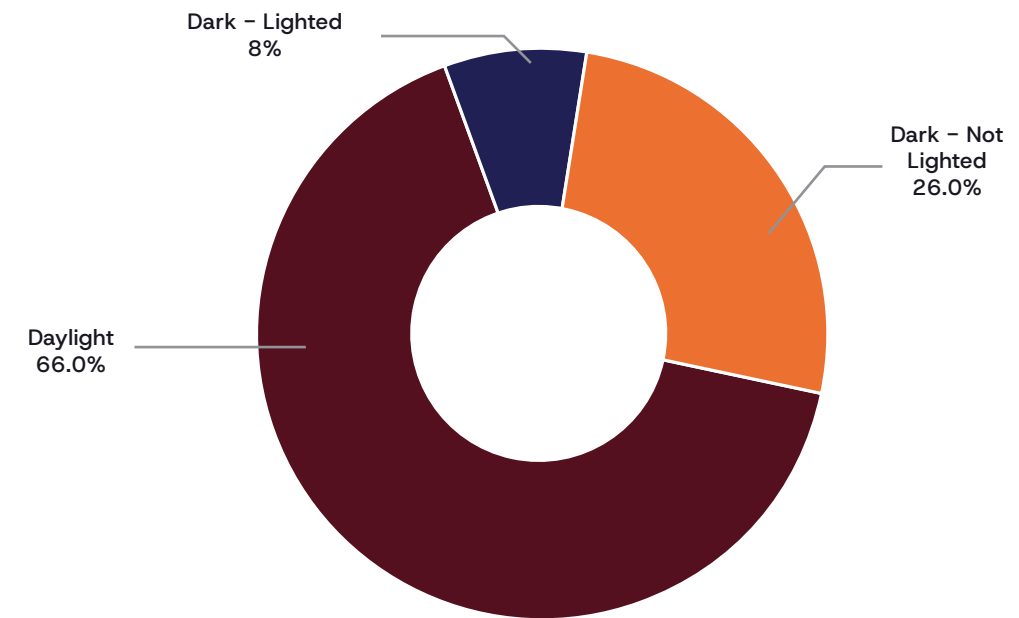
Safety

The Missouri State Highway Patrol (MSHP) manages the Missouri Crash Analysis Reporting System (MCARS), which is a comprehensive resource of traffic crashes. Highway freight-related crashes include those that involve a single truck, a combination of trucks and personal

²⁷FHWA, “Transportation Performance Management,” accessed October 6, 2025, <https://www.fhwa.dot.gov/tpm/reporting/state/state.cfm?state=Missouri>.

vehicles and/or trains. Per the MCARS, there were 136,838 total crashes in Missouri in 2023, of which 15,453 (11.30%) involved a Commercial Motor Vehicle (CMV). CMVs are only slightly overrepresented in the expected share of fatalities with 130 (13.10%) fatalities in 2023. A summary of light conditions at the time of fatal CMV crashes is provided in **Figure 15**.

Figure 15 – Light Conditions for Fatal Commercial Motor Vehicle Crashes, 2023



Source: GFT Analysis of MHSP data, 2023.

When compared to 2019 data, the 2024 total number of crashes involving CMVs decreased by 1.97% and fatal crashes decreased by 2.42%. This indicates safer operations, thanks to Missouri’s multi-disciplined approach to achieving safer roads through education, public policy, enforcement, engineering and emergency response.

Existing Performance Metrics

The highway condition and performance assessment provides a snapshot of current assets. The assessment measures pavement and bridge condition, congestion and roadway safety factors that highlight how the system is performing.

Highway performance is guided by the six SFRP goals: stewardship, safe, prosperous, reliable, connected and innovative. The new goals and their associated metrics, are described in the **Goals, Objectives and Performance Metrics** chapter.



Rail

Freight trains are a vital component of Missouri's multimodal transportation network, providing cost-effective, long-haul movement of bulk goods, manufactured products and intermodal containers, while also sharing corridors with passenger train services. This section examines the condition and performance of Missouri's rail system, including bottlenecks, LOS and safety considerations.

Overview

Missouri consistently ranks among the top rail states in the nation, carrying the fourth-largest volume of freight tonnage in the country. In 2023 alone, 7.30 million railcars carried 344.90 million tons of freight valued at \$663 billion, representing nearly 39.20% of the total value of goods shipped in the state.²⁸

Missouri has the 11th-largest rail network in the U.S., with approximately 3,800 miles of track (in addition to 2,500 miles of railyard track) and more than 6,500 public and private highway-rail crossings (4,381 public and 2,183 private). The state is served by 20 freight railroads, including five Class I carriers: Burlington Northern Santa Fe Railway (BNSF), Canadian Pacific Kansas City (CPKC), CSX, Norfolk Southern (NS) and Union Pacific Railroad (UP). Further, 15 short line railroads maintain 566 miles of track, providing critical first- and last-mile service to rural shippers and local industries. Collectively, these railroads moved 30% of all freight in Missouri in 2023 and volumes are projected to increase in the future.

Additional Considerations: Military Vehicle Size, Weight and Infrastructure Needs

Military freight movements often involve oversized and overweight vehicles, including tanks, armored personnel carriers and heavy transport equipment. Missouri's infrastructure planning must provide adequate pavement strength, bridge load ratings and route clearances to support movement of these vehicles. Strategic Highway Network (STRAHNET) and Strategic Rail Corridor Network (STRACNET) routes are prioritized for investment to maintain these capabilities. In addition, MoDOT's Freight and Highway Safety Divisions coordinate with the MSHP to streamline oversize/overweight permitting processes for military convoys and to manage temporary closures or route adjustments during deployment activities.

²⁸MoDOT, "Missouri Highway-Rail Grade Crossing State Plan," 2022, https://www.modot.org/sites/default/files/documents/MoDOT_SAP_JAN_2022_REV0927.pdf.

Freight trains are a vital component of Missouri's multimodal transportation network, providing cost-effective, long-haul movement of bulk goods, manufactured products and intermodal containers, while also sharing corridors with passenger train services. This section examines the condition and performance of Missouri's rail system, including bottlenecks, LOS and safety considerations.

The state's rail infrastructure extends beyond mainline tracks, encompassing thousands of highway-rail grade crossings, active and inactive spurs and shared freight-passenger corridors. This extensive rail system provides a foundation for Missouri's economy and workforce.

Rail Freight

Rail carries the second largest share of goods in Missouri by both weight and value. Kansas City and St. Louis anchor this rail system as nationally significant hubs, ranked the second- and sixth-largest rail transportation centers in the nation, respectively, with concentrations of key intermodal and switching facilities.²⁹ These hubs connect Missouri to domestic shippers, Canadian and Mexican trade partners and global markets through ocean ports. Railroads support industries such as agriculture, chemicals, mining and automotive manufacturing, while ensuring efficient connections between producers and consumers. In 2023, around 345 million tons of rail freight moved in Missouri, reflecting 30% of all freight movement. This freight volume is forecast to increase in 2043 to 356 million tons, but the relative share is forecast to decrease slightly to 27%.

In 2022, Missouri ranked sixth nationally in freight rail employment, emphasizing the sector's economic footprint on Missouri freight movements.³⁰ **Figure 16** shows the Missouri rail freight network and **Figure 17** shows the top five commodities by tonnage transported via rail in 2023.



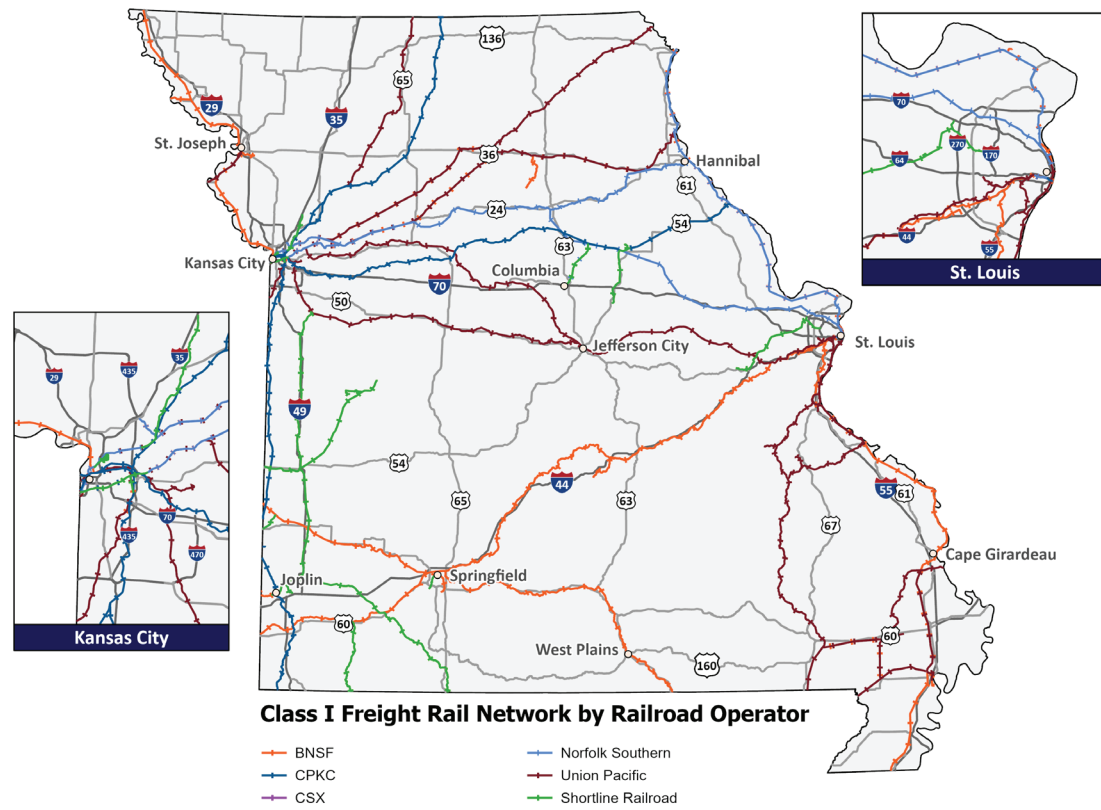
Source: MoDOT

²⁹MoDOT, "Freight Railroads," accessed October 6, 2025, <https://www.modot.org/freight-railroads>.

³⁰Association of American Railroads, "Missouri State Fact Sheet, 2023," <https://www.aar.org/wp-content/uploads/2025/01/AARMissouri-State-Fact-Sheet.pdf>.



Figure 16 – Missouri Rail Freight Network

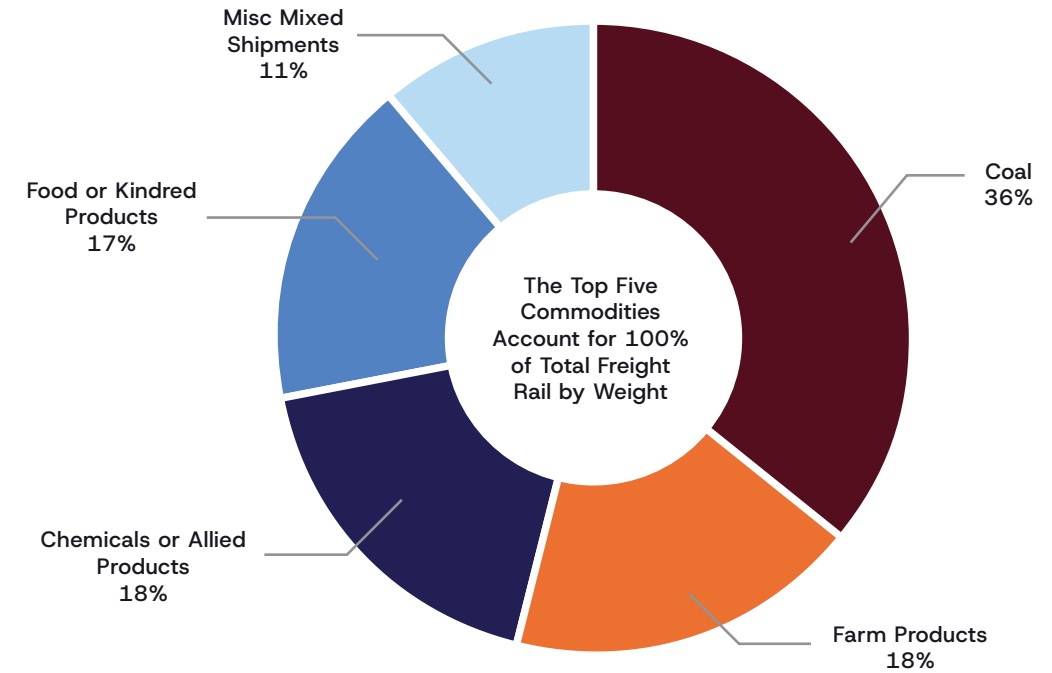


Source: MoDOT, Freight Railroads, 2025.



Source: MoDOT

Figure 17 – Top Five Commodities by Weight (Percent) for Freight Rail, 2023



Source: GFT Analysis of Transearch Data, 2023.

Level of Service

Understanding rail system performance in Missouri requires both quantitative measures of capacity and qualitative input from rail carriers. While LOS is not defined uniformly across the rail industry, carriers in Missouri generally assess system performance through data such as operational restrictions, volume-to-capacity balance and intermodal terminal congestion.

Discussions with Class I operators highlighted recurring bottlenecks in urban areas, such as Kansas City, St. Louis and Sedalia. Several railroads highlighted that much of their traffic in Missouri is passing through rather than having an origin or destination within the state, emphasizing the state’s strategic role in national freight corridors. NS, UP and CPKC all stressed that performance issues in Missouri can affect service well beyond state lines. Railroads also noted that intermodal and yard congestion, low-profile crossings and bridge clearance limitations can create localized constraints that affect throughput. Railroad stakeholder feedback emphasized that LOS is ultimately reflected in service reliability to customers and that coordination with MoDOT on project prioritization and early planning is critical to addressing capacity constraints before they become more costly chokepoints, as further discussed in the Bottlenecks/Chokepoints section below. Class I railroad stakeholders identified specific locations where freight mobility and safety concerns negatively impact operations and LOS, as summarized in **Table 21**.



Table 21 – Rail Chokepoints Identified by Stakeholders

| Location | Freight Mobility/Safety Concern |
|---|--|
| Grain Valley and Nowell | Blocked crossings caused by sidings intersecting major roadways; need for siding relocation to improve freight and community mobility. |
| Various Locations | Railroad-owned highway overpasses present maintenance and jurisdiction challenges; slow orders impact reliability. |
| High Hill/I-70 | Bridge strike due to lack of vertical clearance created major infrastructure failure; resulted in rail rerouting and interstate closure, disrupting both freight and highway mobility. |
| Hannibal Area | River crossing capacity constraints create operational challenges. |
| Pevely Crossing, MO (DOT 445875R) | Low-profile crossing design causes vehicles to get stuck; creates recurring blockage and safety risks. |
| NuCor Steel near Sedalia (Washington St.) | Increased freight and passenger traffic at grade crossing; safety risks for adjacent school and housing; bridge constraints limit emergency vehicle access. |
| Southwest Ave. Bridge, DeSoto Sub (St. Louis) | Vertical clearance limitations; bridge upgrades needed to support freight efficiency. |
| Missouri River Runner Route | Corridor capacity enhancements and siding expansion needed to support freight and passenger mobility. |
| Independence Ave. (Kansas City) | Grade separation functions adequately currently; insufficient track capacity for future growth. |
| Springfield | Chokepoint coming in and out of intermodal facilities in the area. |

Source: GFT Discussions at Rail Stakeholder Meetings.

Bottlenecks/Chokepoints

Railroad bottlenecks, commonly referred to as “chokepoints,” are locations along the freight rail network that constrain efficiency and contribute to the delay in the movement of goods. These chokepoints can be broadly categorized into two types: structural and operational. Structural chokepoints include physical constraints, such as low-clearance bridges and track segments with weight limits or slow orders. Operational or congested chokepoints arise from issues like limited capacity at intermodal yards, scheduling conflicts or shared-use corridors where freight and passenger trains compete for track time.

Structural Chokepoints

- Low-Clearance Areas and Bridges with Size Restrictions:** Bridges can lead to chokepoints by limiting capacity through slow orders as bridges age, limited ability to add additional trackage and height restrictions. Both UP and BSNF provide guidance on the permanent vertical clearance under a structure, with the minimum allowable clearance being 23 feet 4 inches (UP) or 23 feet 6 inches (BNSF).³¹
- Slow-Order Tracks:** Permanent slow-order track segments require trains to slow down below normal operating speed, disrupting scheduled movements and increasing total travel time. Because trains spend more time traversing the slow-order segment, fewer trains can move through that segment, creating a bottleneck effect. This effect can be exacerbated in already congested areas, such as near intermodal facilities or on shared corridors.
- Weight-Limit Tracks:** The industry standard maximum railcar weight, including the weight of commodities and the railcar, is 286,000 pounds. Weight-restricted segments limit the flow of higher-capacity trains and can create chokepoints, especially in otherwise high-capacity corridors or near terminals and interchange points. While most of Missouri’s rail freight network can accommodate heavy axle railcars, there are a few segments with a weight restriction. Additionally, the short line rail carriers noted multiple segments with less than the 286,000-pound capable rail, which can limit their ability to serve customers.

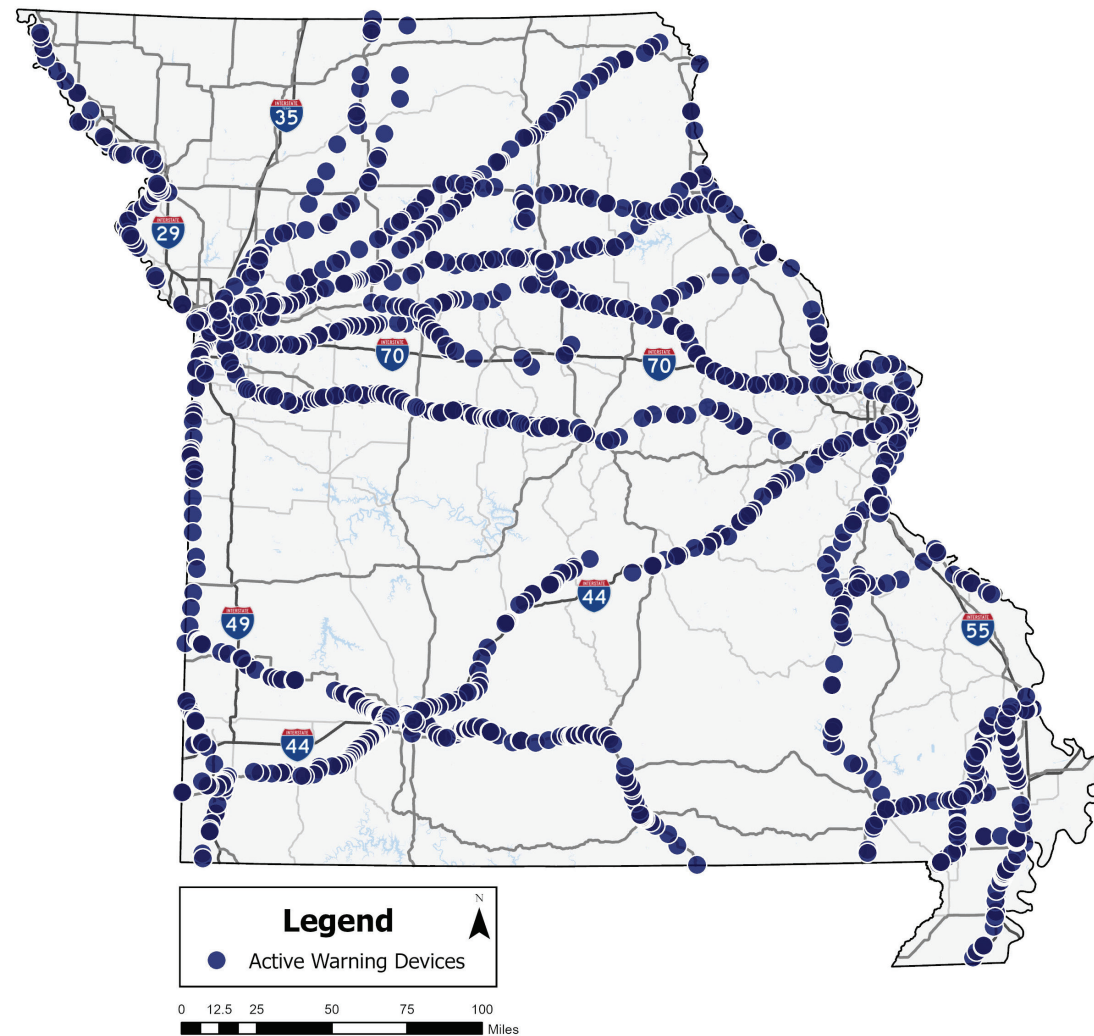
³¹BNSF, “UP - BNSF Railway Guidelines for Railroad Grade Separation Projects,” published January 5, 2016, <https://www.bnsf.com/bnsf-resources/pdf/in-the-community/upr-bnsf-joint-guidelines-railroad-grade-separation-projects.pdf>.



Operational Chokepoints

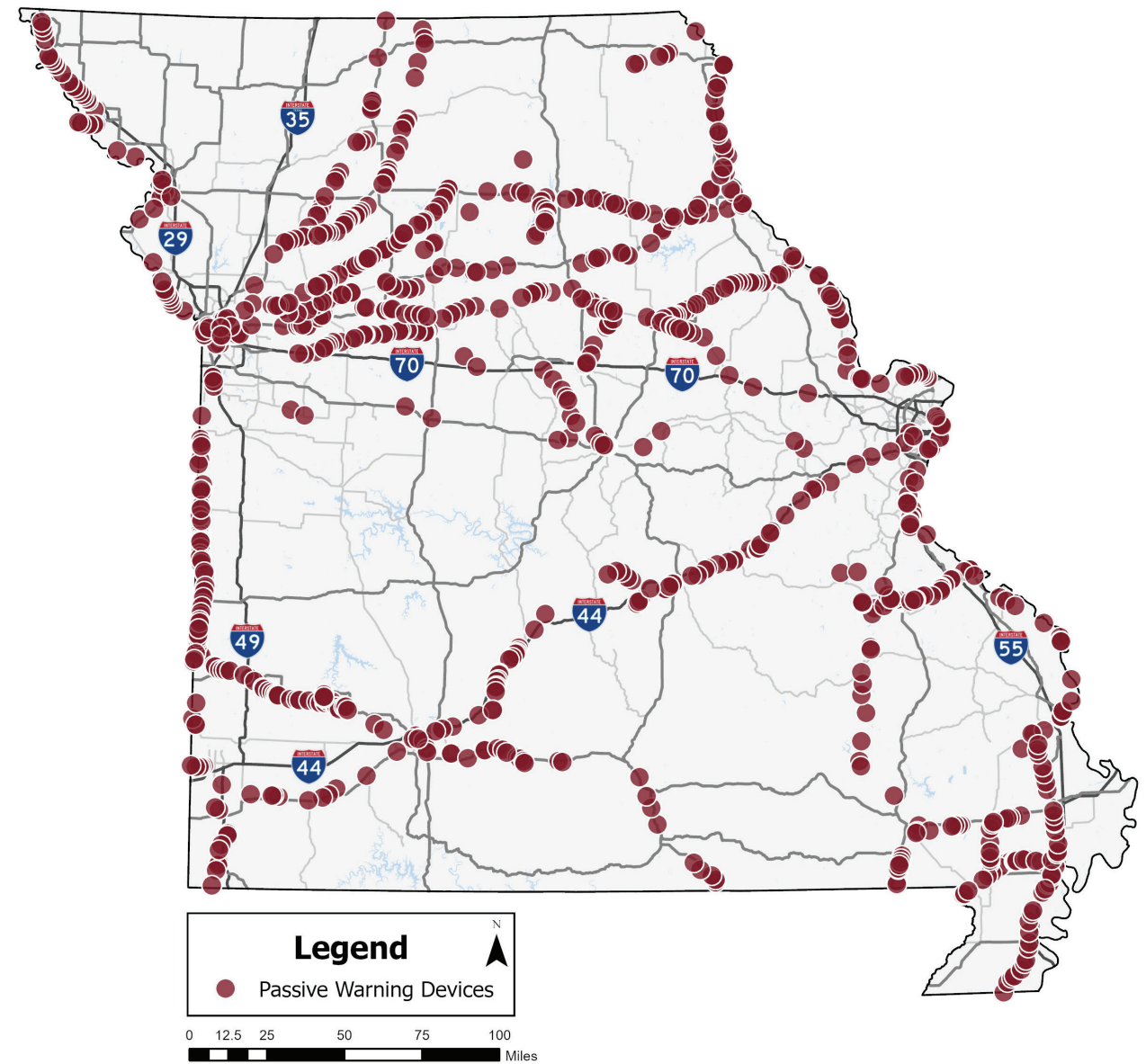
■ **At-grade Crossings:** Trains often reduce speed when approaching at-grade crossings in populated or high-traffic areas, increasing overall travel time and reducing network efficiency. These crossings also risk being occupied, which can disrupt both rail and truck freight movement. While a single crossing may have minimal impact, the cumulative effect of multiple at-grade crossings can create significant chokepoints that constrain capacity and delay freight flow. **Figure 18** and **Figure 19** illustrate the density of active and passive warning at-grade crossings across Missouri, respectively. This highlights areas of higher concentration and safety features that can increase the potential for delays and operational disruption.

Figure 18 - Active Warning At-Grade Crossings



Source: GFT Analysis of Federal Railroad Administration (FRA) Crossing Inventory Data, 2025.

Figure 19 - Passive Warning At-Grade Crossings



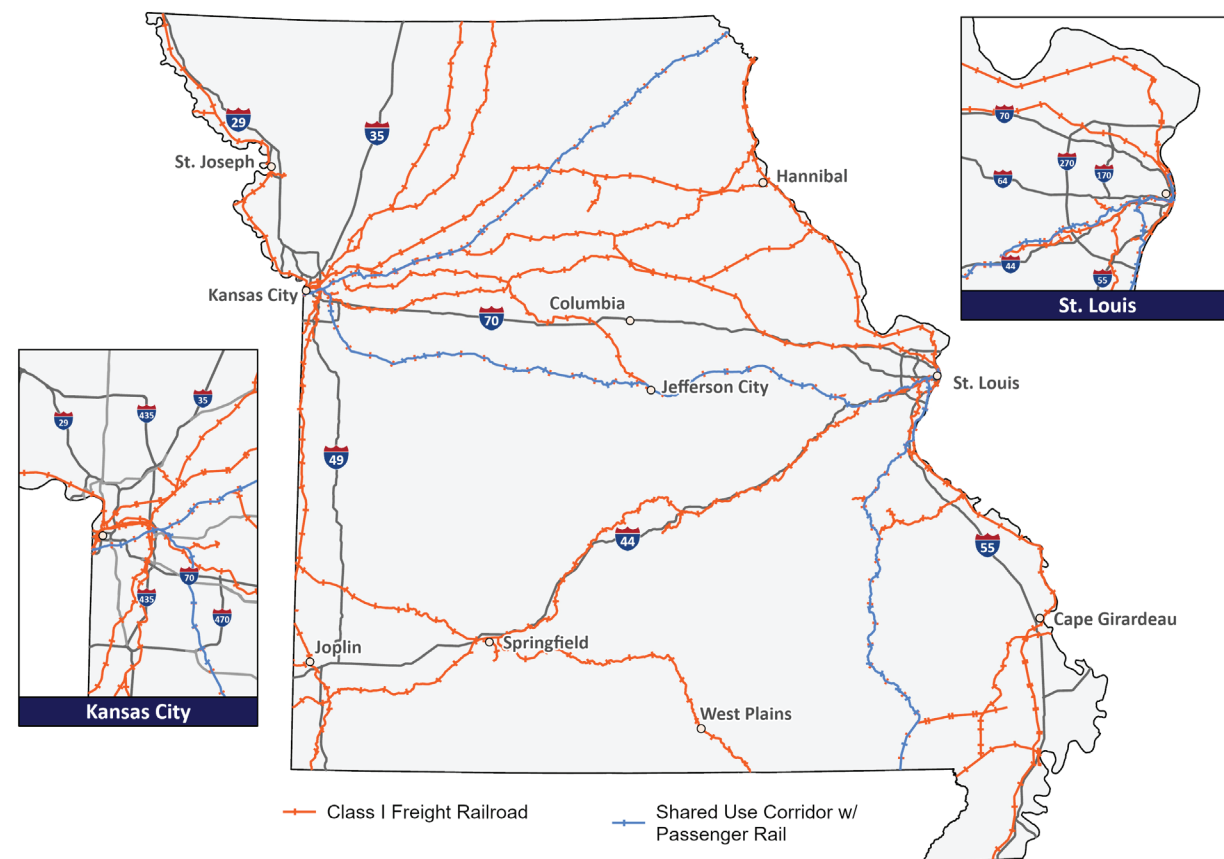
Source: GFT Analysis of FRA Crossing Inventory Data, 2025.



Shared-Use Corridors: Competing interest between freight and passenger rail can pose operational challenges along shared use corridors. Four passenger routes exist in Missouri: the Texas Eagle, Southwest Chief, Lincoln Service and the Missouri River Runner. Passenger rail generally requires strict on-time performance windows, which can constrain freight movement and reduce available capacity for heavier or slower trains. These operational restrictions increase the likelihood of service delays and can create chokepoints. **Figure 20** depicts shared-use rail corridors in Missouri.

Operational Challenges: A number of unexpected operational challenges can also contribute to the presence of chokepoints. Delays at interchange points can occur when traffic volumes exceed the handling capacity of junctions. Railyards and intermodal facilities can become congested when inbound volumes exceed processing capacity. Other circumstances, such as documentation issues or misplaced railcars, can delay individual shipments.

Figure 20 – Shared-Use Rail Corridors



Source: FRA, 2025.

Safety

The safety of all who use Missouri's transportation network is MoDOT's number one priority. Rail safety performance is a critical factor in evaluating both operational reliability and public risk. System characteristics, such as the design and level of protection at grade crossings and public awareness about rail safety, directly influence outcomes. Active Grade Crossings have active warning and control devices, such as bells, flashing lights and gates, in addition to passive warning devices, such as crossbucks, yield or stop signs and pavement markings. Passive Grade Crossings have only passive warning devices. Active warning and control devices can help improve the safety of at-grade rail crossings and MoDOT strongly supports the installation of active warning systems at high-risk locations. However, conversations with Class III railroads indicate that limited financial resources to maintain the active warning system often prevent these short line operators from making necessary upgrades. As emphasized in rail safety discussions with Class I railroads, "the safest crossing is a closed crossing."³²

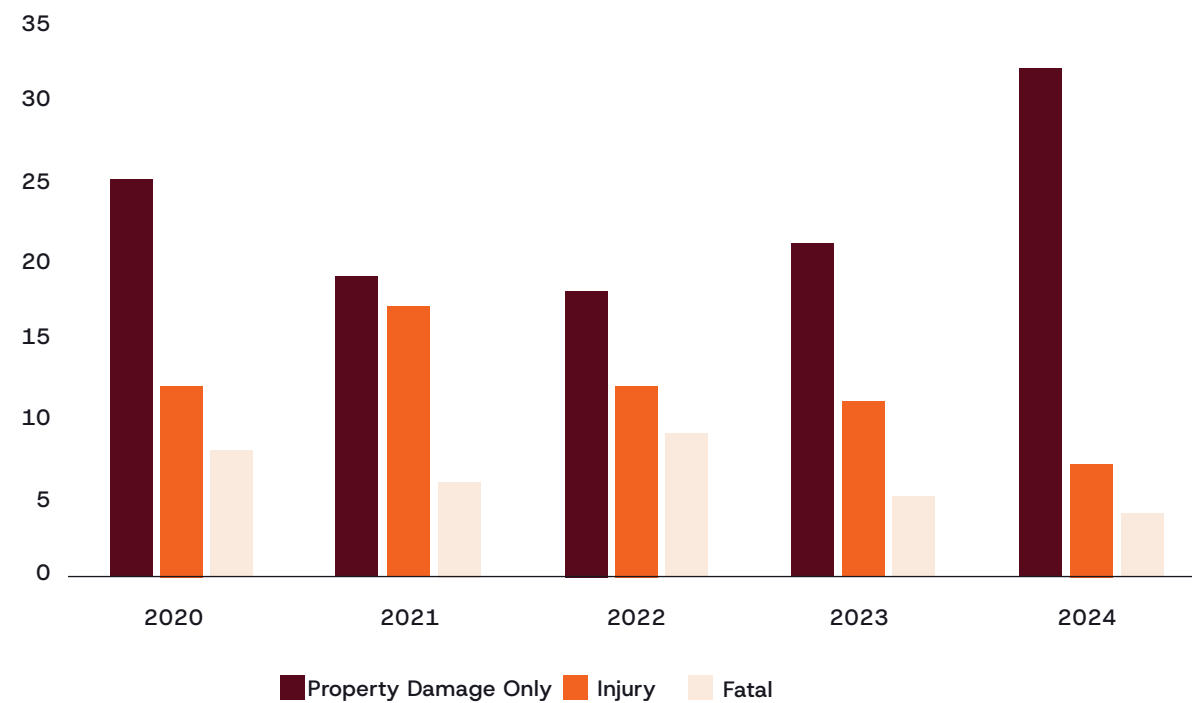
Highway-rail at-grade crossings represent points of mode and user conflict carrying inherent risks, such as collisions, occupied crossings, trespassing and disrupted access to emergency services. The public reports when a train is blocking an at-grade crossing, revealing impacts to train arrivals, emergency access, public mobility or freight delivery. Since 2020, there have been 2,764 blocked-crossing reports in the state of Missouri. The majority of these incidents involved UP trains (60%), followed by BSNF (19%). Nearly 25% of these crossings were blocked anywhere from one hour to more than one day. While blocked crossings were lowest in 2020, likely due to a decrease in road users, a steep decrease of 73% was observed in blocked crossing reports since 2021, reflecting the collaborative focus of the railroads and MoDOT to identify solutions for this issue.

Missouri maintains 3,311 public at-grade highway-rail grade crossings, many of which are located on key freight corridors in both urban and rural areas. Over the past five years, there were a total of 59 injuries and 32 fatalities at at-grade crossings, as shown in **Figure 21**. In 2023, there were 11 injuries and 4 fatalities, a 14% decrease and 33% increase, respectively, from 2019. These numbers have remained consistent, except in 2022 when a truck collided with an Amtrak train at an at-grade crossing causing the train to derail and leading to 4 fatalities and 123 injuries.

³²GFT's Railroad Stakeholder Meeting Conversation, 2025.



Figure 21 – Public Highway–Rail Grade Crossings Incidents by Severity, 2020–2024



Source: MoDOT, 2025.

To mitigate safety concerns and improve outcomes, Missouri participates in a range of activities, including:

- **Missouri Highway-Rail Grade Crossing State Action Plan (SAP):** The SAP identifies highway-rail and pathway-rail grade crossings that have experienced recent incidents and identifies specific strategies for improving safety at grade crossings.
- **Education and Outreach:**
 - **Rail Safety Week:** Missouri promotes education and messaging about highway-rail safety during Rail Safety Week, an industry-led initiative focused on promoting rail safety during a dedicated week in June.
 - **Operation Lifesaver:** Missouri adopted the Operation Lifesaver program, a non-profit organization committed to preventing collisions, injuries and fatalities on railroad tracks and at highway-rail grade crossings. Missouri Operation Lifesaver promotes rail safety through public awareness campaigns and education initiatives.

- **Funding Programs:** MoDOT receives federal and state funding to support investments in highway-rail grade crossing safety improvements through programs such as the Railway-Highway Crossing Program (Section 130) and the Grade Crossing Safety Account (GCSA). In 2023, Missouri allocated \$50 million from the general revenue fund to address passive rail crossings across the state.

Existing Performance Metrics

The condition and performance assessment of rail underscores the importance of Missouri's freight and passenger rail system in supporting industry, safety and mobility. The performance metrics described in the **Goals, Objectives and Performance Metrics** chapter will be used to assess the condition and performance of the rail freight system.

Ports and Waterways

Missouri's rivers provide a cost-effective and energy-efficient freight option, playing a role in reducing highway congestion by diverting heavy loads from roadways. This section reviews the condition of the state's port and waterway system, key chokepoints, safety and regulatory issues and the adequacy of existing metrics to measure both the economic and systemwide benefits of waterborne freight.

Overview

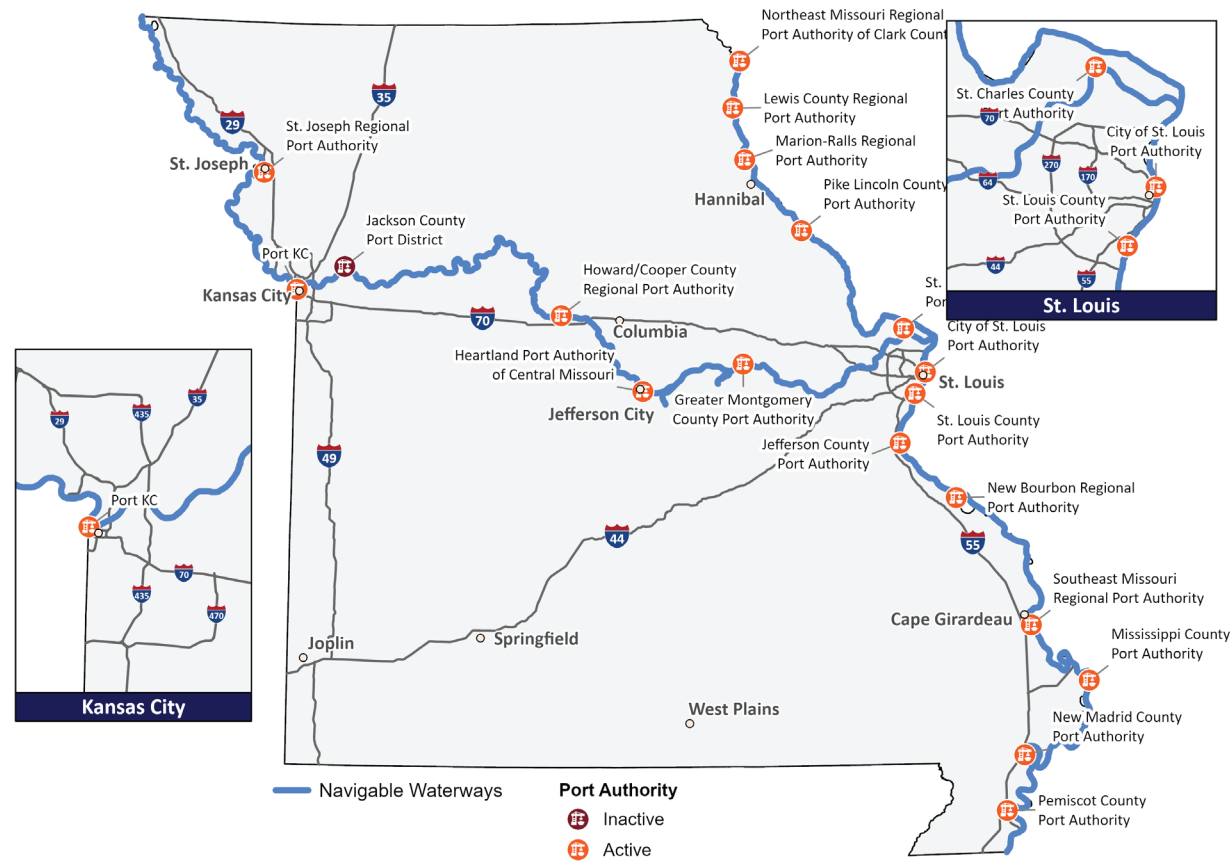
An annual average of \$19.20 billion in cargo is transported on waterways in or adjacent to Missouri.³³ The state has 1,050 miles of navigable rivers, including almost 500 river miles of the Mississippi River and over 550 river miles of the Missouri River. Missouri statutes allow for the formation of port authorities. MoDOT's waterways unit assists cities and counties in forming port authorities to foster local economic development. MoDOT also assists in capital and administrative funding for public port authorities, along with other technical assistance.

The 19 public port authorities and more than 200 private terminals moved 5% of the state's total freight onto or off the Missouri and Mississippi Rivers, reducing the number of trucks on the roadways by more than 2 million. Missouri's public port authority locations are shown in **Figure 22**.

³³Transearch, 2023.



Figure 22 – Missouri Public Port Authorities and Navigable Waterways



Source: Data from MoDOT, 2025.

Missouri has four nationally designated marine highways, which generally shadow the interstate highway system along the Mississippi and Missouri Rivers. Designated marine highways can receive preferential treatment for federal assistance from the U.S. Department of Transportation’s (USDOT’s) Maritime Administration (MARAD). The marine highway system has been designed to expand the use of the nation’s waterways to relieve congestion, reduce air emissions and generate other public benefits by increasing the efficiency of freight movement within the surface transportation system.

Marine highways serving Missouri, displayed in **Figure 23**, include the following:

- M-29 consists of the Missouri River from Kansas City to Sioux City, Iowa.
- M-70 consists of the Missouri River from Kansas City to St. Louis.
- M-35 includes the Upper Mississippi River from the Twin Cities to St. Louis.
- M-55 includes the Illinois River from Chicago to St. Louis, then the entirety of the Mississippi River downriver (south) of St. Louis to the Gulf.

Figure 23 – U.S. Marine Highway Routes



Source: U.S. Maritime Administration (MARAD), U.S. Marine Highway Program Routes Map, 2025.

Missouri also has four toll ferry services that cross the Mississippi River: Golden Eagle, Grafton, Ste. Genevieve-Modoc and Dorena-Hickman. The Golden Eagle Ferry is privately owned and operated; the Grafton Ferry is privately operated with the landings maintained by St. Charles County (Missouri) and the City of Grafton (Illinois); the Ste. Genevieve-Modoc Ferry is privately operated, but it is owned by the New Bourbon Regional Port Authority (Missouri), with the Illinois Department of Transportation owning and maintaining the Illinois landing; the Dorena-Hickman Ferry is owned and operated by the Mississippi County Port Authority (Missouri). The locations of Missouri’s ferry services are shown in **Figure 24**. These ferries often transport freight trucks, reducing the number of miles traveled on the highways.



Figure 24 – Ferry Locations and U.S. Marine Highways in Missouri

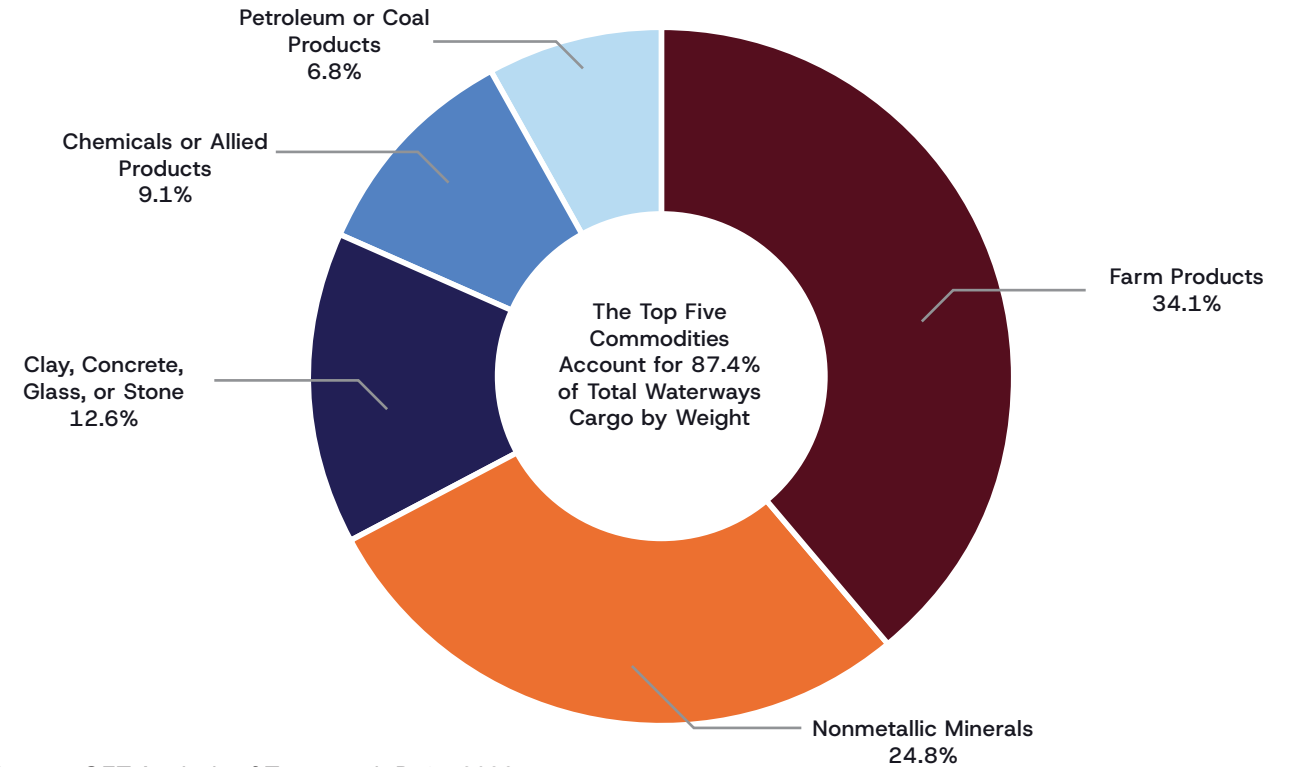


Source: MARAD, 2025; MoDOT, 2025.

Waterborne Freight

Commodities transported by barge on the Missouri River include agricultural products, fertilizers, petroleum products, road salt, aggregates and iron/steel. The top five commodities by tonnage (%) transported by barge on Missouri waterways are presented in **Figure 25**. The Mississippi River continues to be a key transportation option for a variety of agricultural products, as well as other bulk materials including aggregates, petroleum products, chemicals and building materials.

Figure 25 – Top Five Commodities by Weight (Percent) for Waterways, 2023



Source: GFT Analysis of Transearch Data, 2023.

In 2023, 51.10 million tons of freight were moved on waterways through or adjacent to Missouri, of that, 32 million tons of freight originated on Missouri waterways. By 2043, Missouri waterways freight tonnage is forecast to increase to 58.60 million tons, which is a cumulative increase of 14.50% and a compounded annual growth rate of 0.7%. The value of this freight is expected to increase to \$22.60 billion by 2043, which is a cumulative increase of 17.50% over 2023 freight value. Note, this freight moves on Missouri waterways, but it does not necessarily originate or terminate at a Missouri public port or private river terminal.

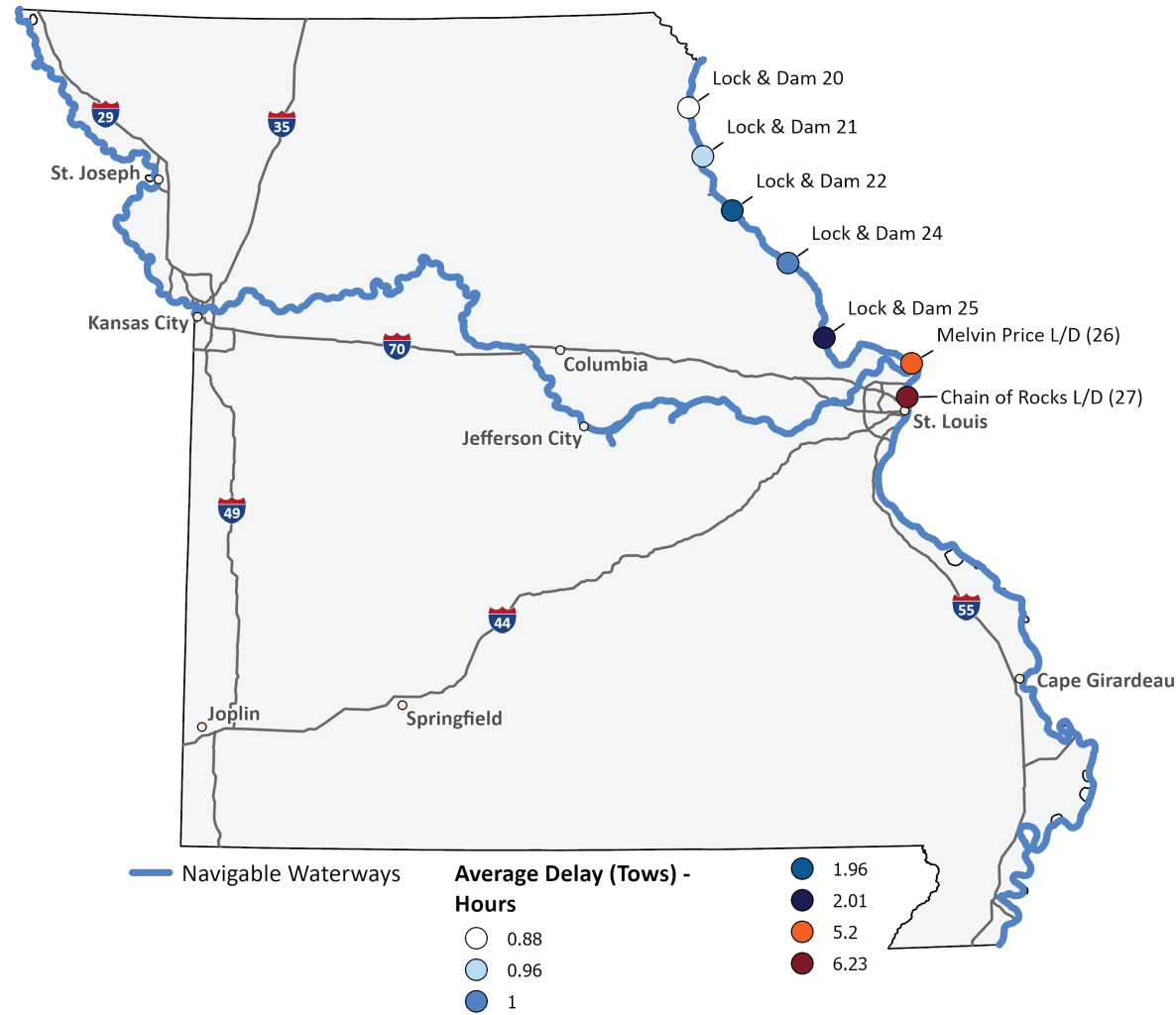
Level of Service

The current average age of the seven Mississippi River locks/dams in Missouri is 77 years, or an average of 84 years when the newest lock/dam is excluded. With a design lifespan of 50 years, maintenance and repairs of the locks/dams have the potential to negatively impact barge freight mobility more frequently. When they occur, impacts are primarily in the form of delays in processing barge tows through the locks or the locks not being available at all for a period of time, either of which causes cargo owners to consider a modal shift to rail or truck.



For reference, a barge(s) and accompanying push boat are referred to as a “barge tow” in the industry. When a barge tow arrives at a lock, it is registered to the queue by the lock personnel. The USACE defines “delay” as the time a barge tow spends in the queue awaiting lockage. Based on USACE Lock Performance Monitoring System (LPMS) data, the average delay per barge tow in 2023 at each of the seven Mississippi River lock/dams in Missouri is shown in **Figure 26**.

Figure 26 – Lock Average Delay, 2023



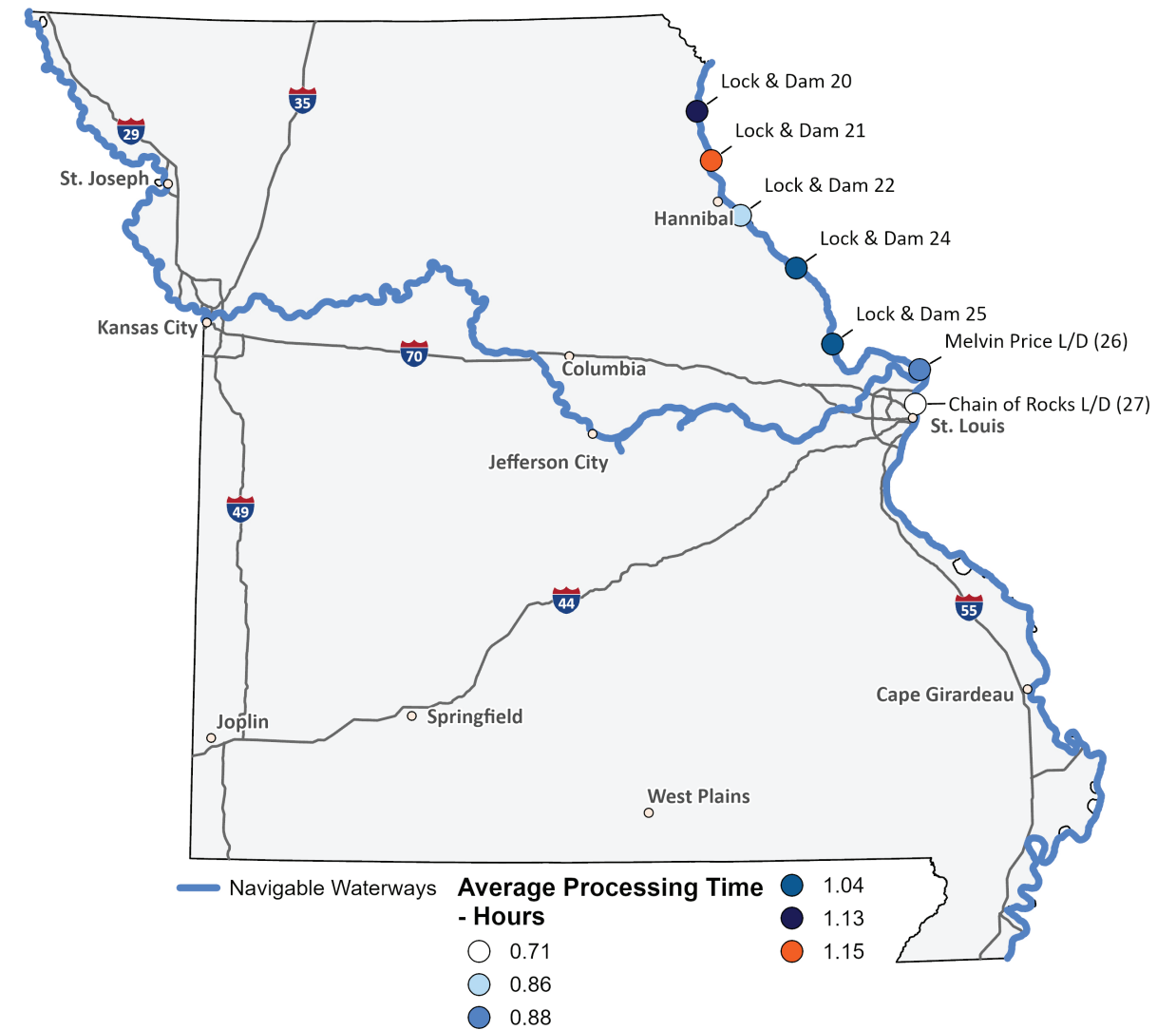
Source: USACE, Lock Performance Monitoring System (LPMS) Dataset, 2023.

As indicated, the average delay per barge tow is generally lower at upstream locks and higher at downstream locks. This is expected, as the downstream locks are effectively the bottlenecks of the system – all barge traffic with an origin upriver of St. Louis and a destination downriver of St. Louis (or vice versa) must pass through Locks and Dam 27, for example. As shown in **Figure 26**, the average delay per barge tow at Lock and Dams 20, 21 and 24 is about one

hour, Lock and Dams 22 and 25 is about two hours and Lock and Dams 26 and 27 is over five hours per barge tow.

Per USACE nomenclature, lock processing time starts when a barge tow reaches the front of the queue and begins the process of “locking through.” Processing time ends when a barge tow completes “locking through” and has completely exited the lock. Based on USACE data, the average processing time per barge tow in 2023 at each of the seven Mississippi River lock/dams in Missouri is shown in **Figure 27**. As indicated, all seven of the Missouri locks had an average processing time of about one hour per barge tow.

Figure 27 – Lock Average Processing Time, 2023



Source: USACE, LPMS Dataset, 2023.



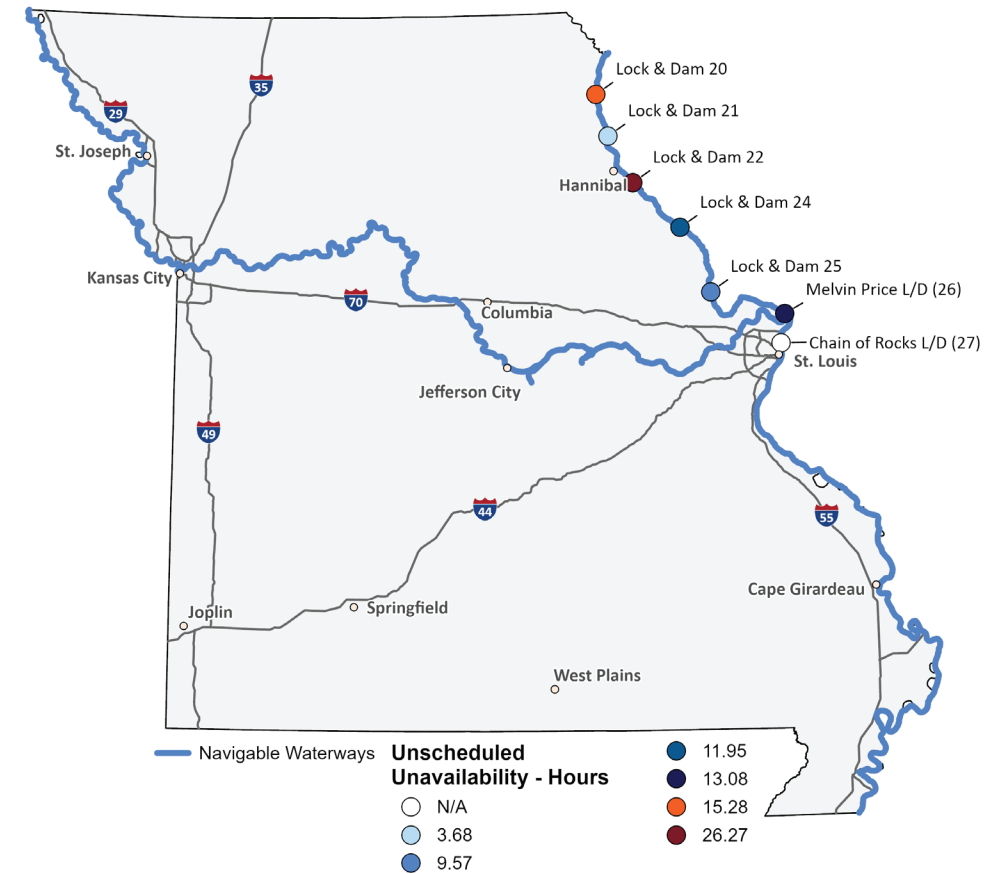
In addition to the preceding lock performance metrics, the USACE also tracks the amount of time each lock is unavailable to process barge tows (i.e., the lock is shut down). Further, the USACE tracks both scheduled and unscheduled lock unavailability time.

Scheduled lock unavailability time generally corresponds to planned maintenance and/or proactive repairs. The USACE minimizes the impact of scheduled lock unavailability time by disseminating notice of planned outages to barge operators in advance, allowing barge operators to plan accordingly.

However, unscheduled lock unavailability can have significant negative impacts on barge operators and freight mobility. Based on USACE data, the average unscheduled unavailability time in 2023 at each of the seven Mississippi River locks/dams in Missouri is shown in **Figure 28**. Note, unscheduled unavailability time in 2023 for Lock and Dam 27 was not available from the USACE data. Unscheduled unavailability time in 2023 for the other six locks ranged from about 4 hours (Lock and Dam 21) to over 26 hours (Lock and Dam 22), with an average of about 13 hours.



Figure 28 – Unscheduled Lock Unavailable Time, 2023



Source: USACE, LPMS Dataset, 2023.

For reference and to add context to the unscheduled unavailability time, USACE Rock Island District locks in Missouri (Lock and Dams 20, 21 and 22) operate 24 hours per day, seven days per week during the navigation season, which is generally early March through early December and St. Louis District locks in Missouri (Lock and Dams 24, 25, 26 and 27) operate 24 hours per day, seven days per week year-round. Thus, considering the potential total operational hours, an average of about 13 hours of unscheduled unavailability time per lock is relatively low.

Extended periods of high or low river levels can have a significant negative impact on waterborne freight levels of service. During periods of high river levels, barge transportation can be impacted by vertical clearance reduction under bridges. More commonly, high river levels can also produce dangerous currents that may result in barge traffic being completely shut down for safety reasons by the USCG. During periods of low river levels, the navigation channel width and/or depth can be reduced. Narrowed channel width often results in narrower barge tows (i.e., fewer barges per tow) and reduced navigation channel depth often results in barges being light-loaded (i.e., loaded at less than full capacity) to reduce barge draft. Both



scenarios, especially when barge tows must be both narrowed and light-loaded, result in reduced system efficiency.

Another issue that can have a significant negative impact on waterborne freight levels of service is sedimentation. Particularly during periods of high river levels, sediment can be deposited in the navigation channel and the slackwater harbors in which some of Missouri's ports operate on the Mississippi River. During subsequent periods of low river levels, the built-up sediment effectively decreases the navigation channel and/or slackwater harbor depth needed for normal barge operations.

For reference, a slackwater harbor is a natural or man-made harbor area that is typically perpendicular to a river and provides an operations area generally free from river current. To maintain adequate operational depth, particularly during periods of low river levels, slackwater harbors must be dredged periodically. Maintenance dredging is typically a large expenditure for slackwater harbor ports, but without it, barges cannot be filled to maximum capacity, thus decreasing efficiency and revenue for ports and/or their tenants. In extreme cases, a slackwater harbor can become completely inaccessible without maintenance dredging.

A similar scenario is realized when sediment build-up occurs within a river's navigation channel, resulting in the need for dredging. Again, without dredging sediment that has built up in the navigation channel, it may not be feasible to fill barges to maximum capacity, thus decreasing efficiency and revenue for ports and/or their tenants. In extreme cases, a shallow area within the navigation channel caused by sedimentation could completely shut down that portion of the river to navigation. The portion of the Missouri River that traverses Missouri, as well as the portion of the Mississippi River south of the St. Louis area, relies on river training structures (dikes, revetments, etc.) to self-scour the navigation channel, maintain depths and minimize the need for dredging. For this reason, maintenance of the river training structures



Source: MoDOT

is essential to maintaining adequate navigation channel depth on the Missouri River and the portion of the Mississippi River downriver from the St. Louis area. Maintenance of river training structures and navigation channel depth/dredging is the responsibility of the USACE.

Bottlenecks/Chokepoints

The Mississippi River is free flowing with no locks and dams downriver (south) of St. Louis. Navigation on this portion of the river is generally free of the bottlenecks/chokepoints described above and typically only impacted negatively by periods of very high or very low river levels caused by flooding or drought, respectively. However, upriver of St. Louis, Mississippi River flow and navigation channel depth is regulated by a series of 29 locks and dams and as stated previously, seven of these locks and dams span the Missouri/Illinois border.

Per the USACE, each of the seven Mississippi River locks/dams in Missouri has one lock chamber that measures 600 feet long by 110 feet wide. Each of the two most downriver locks/dams (26 and 27) has a second lock chamber that measures 1,200 feet long by 110 feet wide, with the smaller lock chamber used as a backup during outages of the larger lock chambers. The engineering design of a second larger lock chamber is currently underway at the most downriver lock/dam that currently has only one smaller lock chamber (25). The locations and lock chamber lengths for the seven locks/dams in Missouri are shown in **Figure 29**. The smaller lock chambers limit the number of barges that can be processed during each lock cycle, forcing large barge tows to be broken apart, thus decreasing the efficiency of the system.

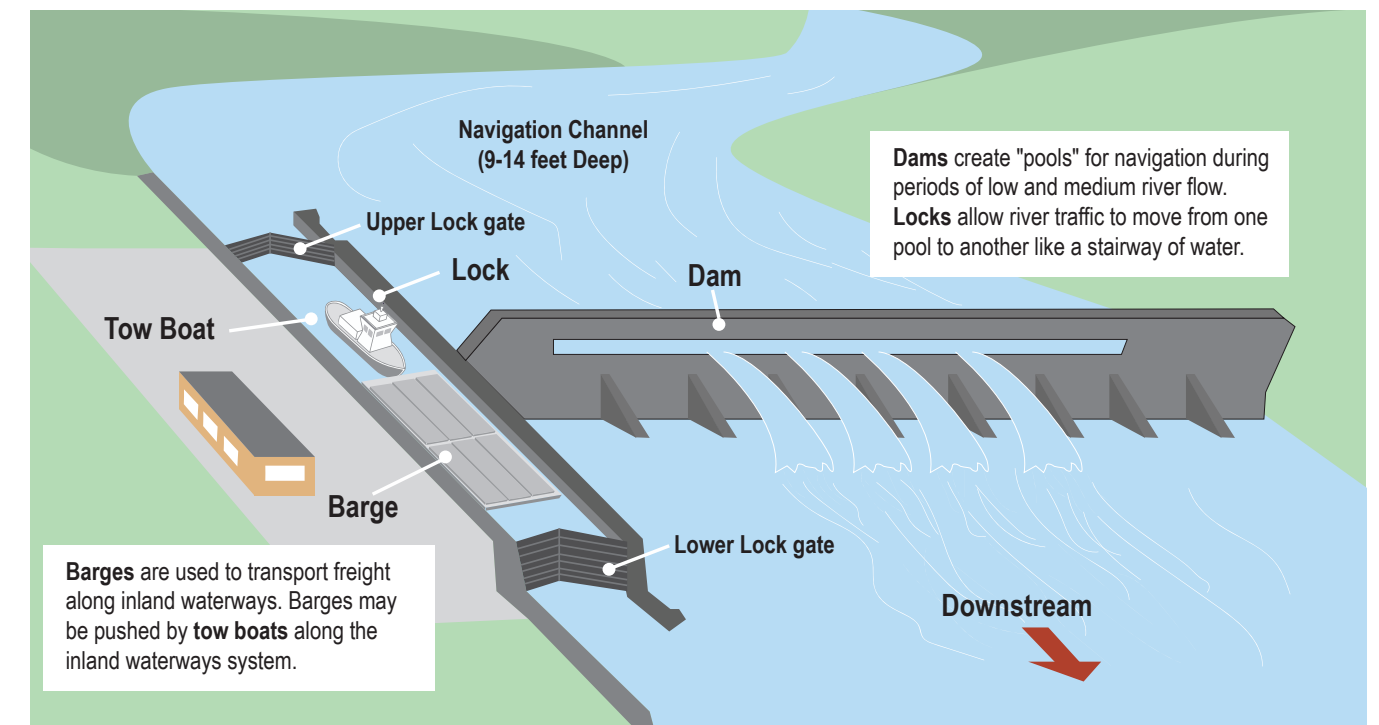


Figure 29 – Lock/Dam Locations and Lock Chamber Lengths



Source: USACE Geospatial Open Data, Locks Dataset, 2025.

According to the USACE, five of the Mississippi River locks/dams in Missouri began operations between 1935 and 1940, one began operations in 1953 and the most recently constructed lock/dam of the seven (26) began operations in 1989. Considering all seven locks/dams in Missouri, as stated previously, the average age is 77 years, or an average of 84 years when the newest lock/dam is excluded. The design lifespan of the locks/dams is 50 years, so all but the newest are well beyond their expected lifespan.

Each of the seven Mississippi River locks/dams in Missouri represent potential bottlenecks. The smaller lock chambers at five of the locks/dams are currently considered bottlenecks and decrease waterway transportation system efficiency, because they limit the number of barges that can pass through the lock at one time. Further, due to the age of this infrastructure, all seven of the Mississippi River locks/dams in Missouri can also become chokepoints when

unplanned repairs are required. These situations effectively shut down all navigation through whichever lock/dam requires repairs.

Similar to the portion of the Mississippi River downriver from St. Louis that is free of locks/dams, the portion of the Missouri River in Missouri is free of locks/dams and relies on river training structures (dikes, revetments, etc.) to maintain adequate depth in the navigation channel. For this reason, bottlenecks/chokepoints on the Missouri River in Missouri are typically only created by periods of very high or very low river levels caused by flooding or drought, respectively.

Safety

A review of available USCG data indicates only two incidents occurred on waterways in or adjacent to Missouri in the last two decades (2004 to 2024).³⁴ Both incidents involved the loss of life of a barge crew member when they fell overboard into the Mississippi River while transiting a lock/dam. One incident occurred in 2022 at Lock/Dam 25 and the other incident occurred in 2023 at Lock/Dam 27. Although these incidents are tragic, the low total number of incidents indicates that barge transportation on the inland waterway system is relatively safe.

Existing Performance Metrics

The ports and waterways condition and performance assessment highlights the value of ports and waterways in moving commodities efficiently and linking the state to global trade. The performance metrics described in **the Goals, Objectives and Performance Metrics chapter** will be used to assess the condition and performance of the waterborne freight system.

Aviation

Missouri's aviation system plays a strategic role in the state's freight network, moving relatively small volumes of cargo by weight but disproportionately high-value goods that support e-commerce, manufacturing and time-sensitive supply chains. Stakeholders emphasized that while aviation offers competitive advantages in speed and value, the sector continues to face infrastructure constraints, funding gaps and workforce shortages that influence overall performance. In assessing condition and performance, this section examines air cargo trends, key bottlenecks and safety considerations. The locations of Missouri's commercial airports are shown in **Figure 30**.

³⁴Data from USCG, "Marine Casualty Reports," accessed August 13, 2025, <https://www.dco.uscg.mil/Our-Organization/Assistant-Commandant-for-Prevention-Policy-CG-5P/Inspections-Compliance-CG-5PC-/Office-of-Investigations-Casualty-Analysis/Marine-Casualty-Reports/>.



Figure 30 – Commerical Airports in Missouri



Source: MoDOT, 2025.

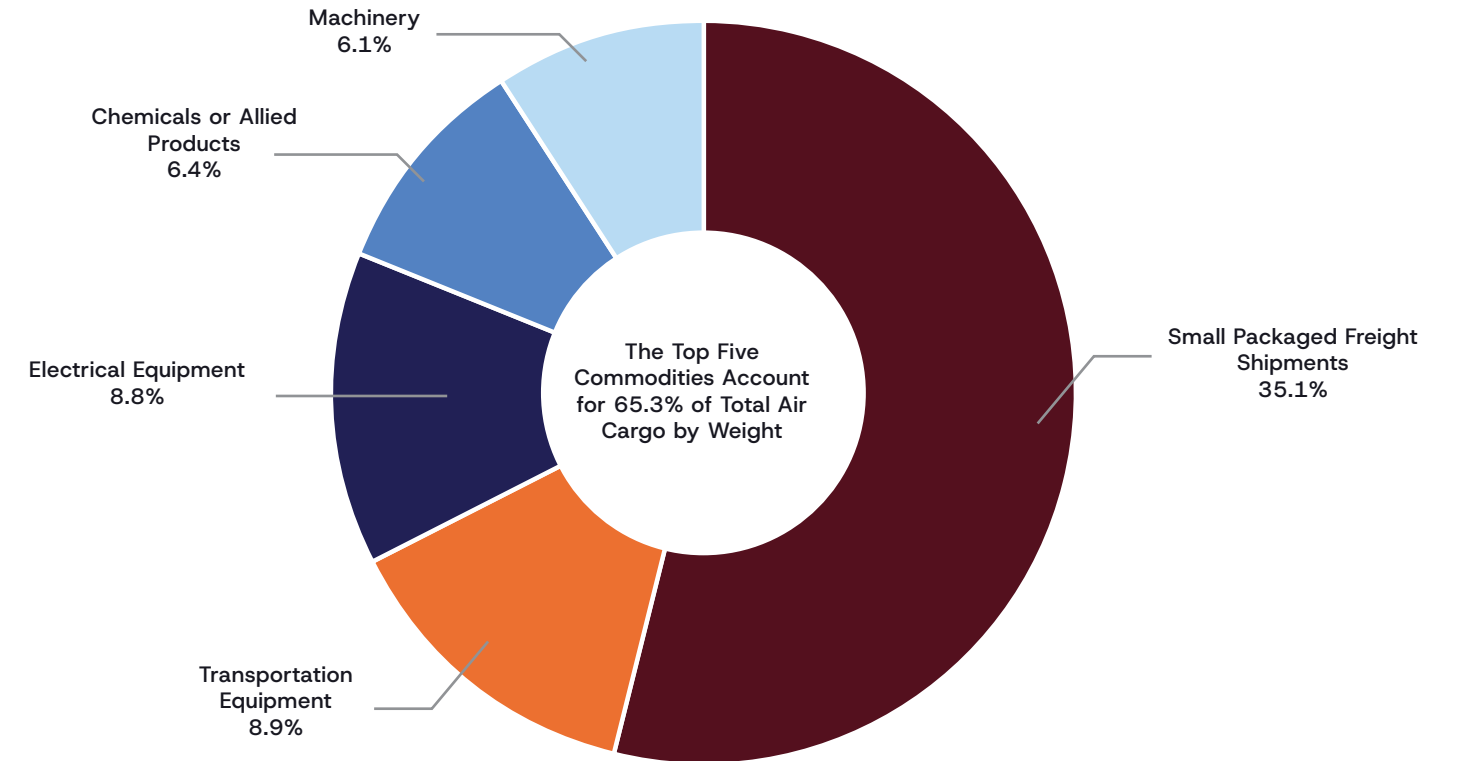
Air Cargo

Missouri has 120 public-use airports, with only three of those handling freight cargo. Missouri’s three freight airports are Kansas City International Airport (MCI), St. Louis Lambert International Airport (STL) and Springfield-Branson National Airport (SGF), which combined support the transportation of over 400 million pounds of freight each year. STL, the region’s primary cargo airport, moved 160 million pounds of cargo in 2023 for dedicated freight carriers such as UPS, FedEx, Amazon, DHL and more, as well as belly cargo moved on passenger airlines. In the same year, SGF moved 31.2 million pounds for dedicated daily freight carriers such as FedEx and UPS, whereas MCI moved 233.5 million pounds of total freight. MCI’s primary cargo carriers also include FedEx, Amazon, UPS and DHL.

While the overall volume of freight moved by air in Missouri is relatively modest compared to other modes, it represents a disproportionately high value per ton. Understanding the types of

goods that move by air provides additional insight into aviation’s role in the multimodal system. **Figure 31** highlights the top five commodities carried by air, illustrating the concentration on high-value, time-sensitive products that depend on fast and reliable delivery.

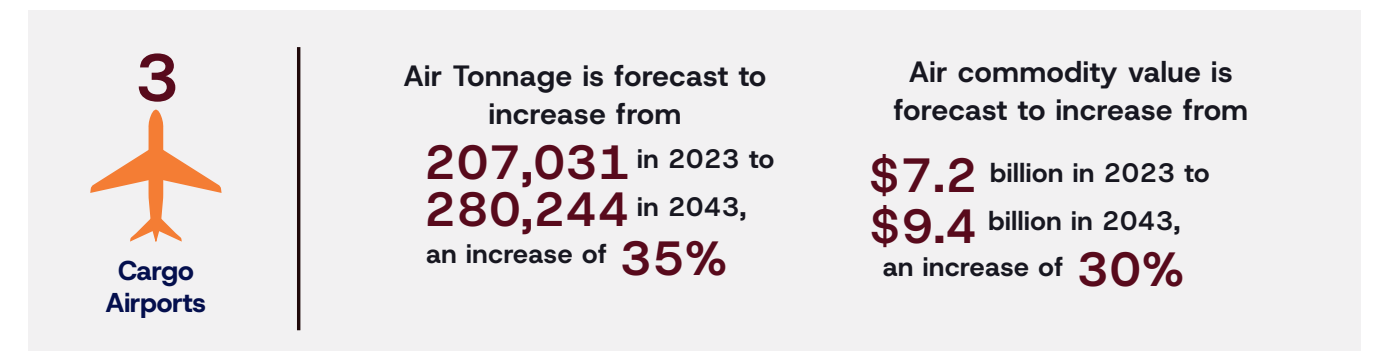
Figure 31 – Top Five Commodities by Weight (Percent) for Air Cargo, 2023



Source: GFT Analysis of Transearch Data, 2023.

As shown in **Figure 32**, according to Transearch data, air cargo is forecast to increase in value and tonnage from 2023 to 2043.

Figure 32 – Existing Facilities and Air Tonnage (2023) and Value Forecasts (2043)



Source: GFT Analysis of Transearch Data, 2023.



In 2023, SGF was ranked as the 123rd busiest airport in the U.S., STL ranked as 34th and MCI was ranked as 40th. On average, the Aviation program totals \$30-35 million per year. For fiscal year (FY) 2025, MoDOT received appropriations of \$98.10 million in federal funds and \$38.40 million in state funds to support rehabilitation and capital projects and improvements mostly focused on the general use airports, with the three cargo airports receiving funds directly from Federal Aviation Administration (FAA).

Air Cargo Bottlenecks

Although not considered bottlenecks in a traditional sense, Missouri’s air cargo sector faces several infrastructure and funding-related bottlenecks that constrain growth. The most pressing challenges include aging cargo ramps in need of major reconstruction, cargo apron areas that are already nearing capacity and access limitations to connecting rail and truck facilities. While recent investments have supported improvements at some facilities, stakeholders emphasized that funding programs, such as FAA/Air Improvement Program (AIP), often prioritize passenger-related infrastructure over cargo needs, leaving gaps in support for freight-focused projects. These constraints highlight the need for additional investment in air cargo infrastructure to meet the growing demands of e-commerce, express delivery and belly cargo operations.

Safety

There have not been any crashes in Missouri associated with major passenger or air cargo carriers. Aviation safety measures, such as crash rates or statistics, are challenging to quantify. For example, many of the aircraft that fly over the state and have an emergency or incident are not based in Missouri. Additionally, an aircraft incident over Missouri does not necessarily reflect any infrastructure or service issues in the state.

Existing Performance Metrics

The aviation condition assessment highlights the statewide importance of airports in supporting passenger travel and freight movement. The performance metrics described in **Goals, Objectives and Performance Metrics chapter** will be used to assess the condition and performance of the air freight system.

Chapter 5. Truck Parking

Trucks can operate anywhere there is a road, making them the most flexible means of transport in the nation’s supply chain. Trucks move more goods in Missouri than any other mode, with 55% of all goods moved by truck in 2023, increasing to 59% by 2043.

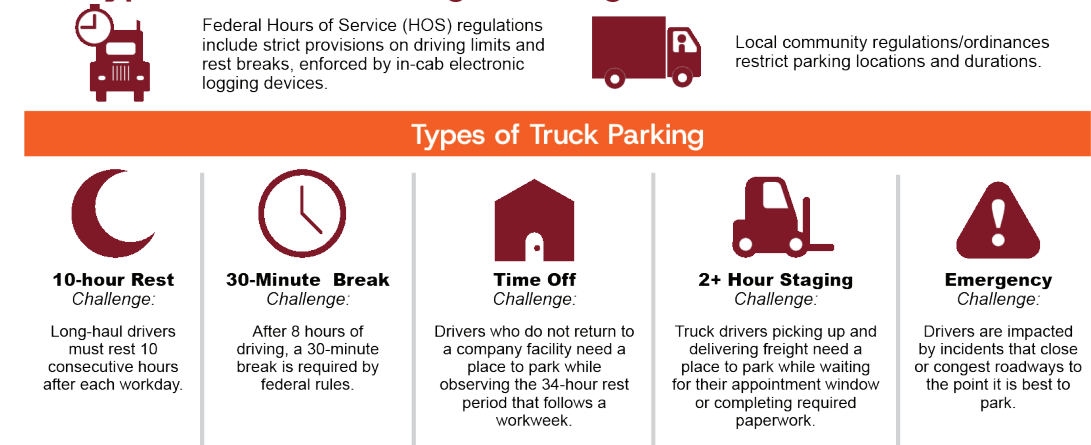
For an industry that is known for movement, it can be surprising that one of a truck driver’s most critical tasks is finding a safe, convenient place to park for rest and breaks with only one dedicated parking space for every 11 trucks in the United States (U.S.), the demand for truck parking far exceeds the supply. To read the full analysis, see the **Truck Parking Analysis Technical Memorandum** and associated appendices.

Why Truck Parking is Needed:

Federal Hours of Service (HOS) regulations exist to prevent driver fatigue. They limit the time a driver can operate prior to mandatory rest periods. As a result, drivers often park well before their full hours are spent, foregoing productivity to remain in compliance, as shown in **Figure 33**.

State roadside accommodations and privately owned truck stops offer parking spaces, but drivers often find these locations filled beyond capacity. Some turn to parking on highway ramps and shoulders, local streets and other unauthorized locations.

Figure 33 – Types of Truck Parking Challenges




Source: Adapted from Texas Department of Transportation, El Paso/Far West Texas Truck Parking Action Plan, 2024.



Truck Parking Analysis

This study's data-driven approach updates Missouri's rural interstate truck parking supply and demand information. As seen in **Table 22**, 8,925 truck parking spaces were identified on Missouri's rural interstate corridors and on U.S. Route 36.

Table 22 – Missouri's Truck Parking Supply by Corridor, 2025

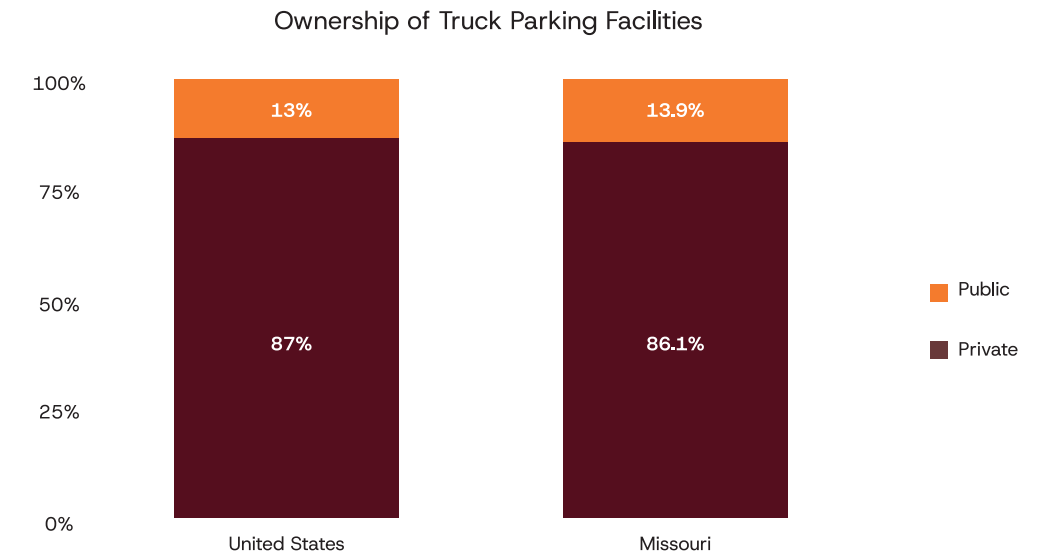
| Corridor | Number of Truck Parking Facilities | | Number of Truck Parking Spaces | | | |
|--------------|------------------------------------|------------|--------------------------------|--------------|--|--------------|
| | Public | Private | Public | Private | | |
| I-29 | 7 | 10 | 169 | 450 |  <p>Total Truck Parking Spaces</p> | |
| I-35 | 8 | 11 | 143 | 521 | | |
| I-44 | 12 | 23 | 375 | 2,592 | | |
| I-49 | 1 | 15 | 15 | 877 | | |
| I-55 | 8 | 19 | 255 | 1,150 | | |
| I-57 | 1 | 2 | 16 | 124 | | |
| I-70 | 10 | 20 | 250 | 1,961 | | |
| I-155 | 1 | 0 | 11 | 0 | | |
| U.S. 36 | 2 | 0 | 16 | 0 | | |
| TOTAL | 50 | 100 | 1,250 | 7,675 | | 8,925 |

Source: GFT Analysis of MoDOT Data and Truck Parking Websites and Applications, 2025.

Privately owned truck stops provide most of Missouri's truck parking spaces. The public/private ownership split in Missouri mirrors the nationwide split. In the U.S., 87% of truck parking spaces are privately owned, while that figure for Missouri's rural interstates is 86.1%, as shown in **Figure 34** and **Figure 35**.³⁵

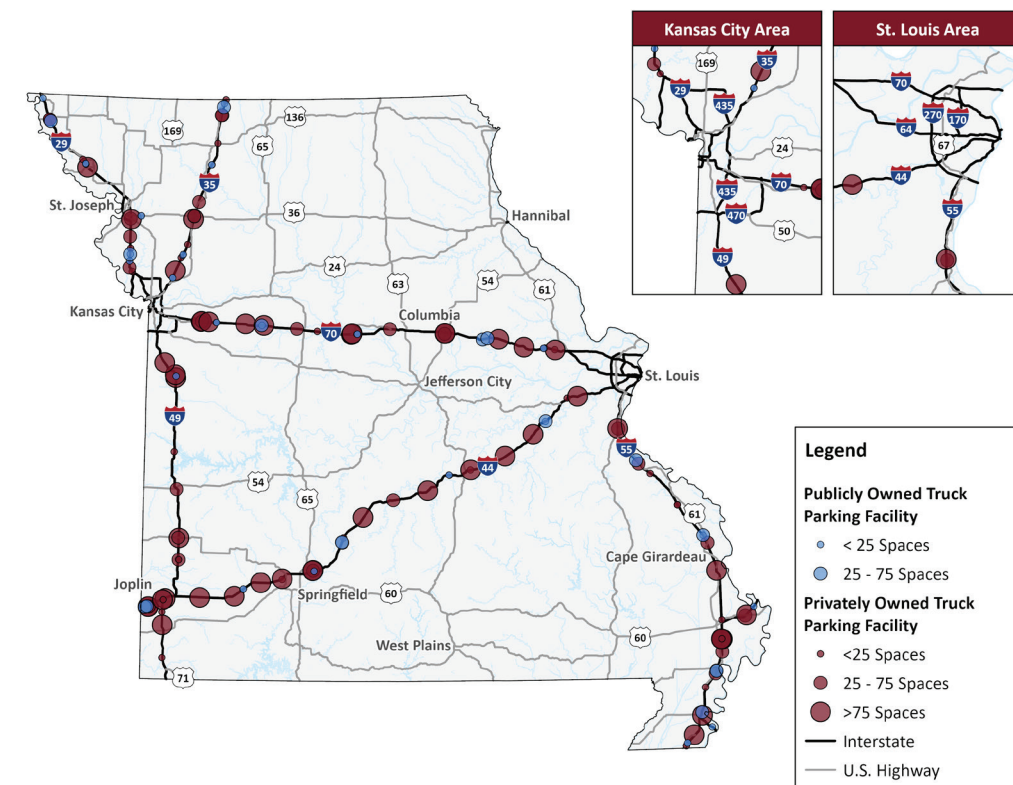
³⁵Federal Highway Administration (FHWA), Office of Freight Management, "Jason's Law Commercial Motor Vehicle Parking Survey and Comparative Assessment," December 1, 2020, <https://www.txdot.gov/content/dam/docs/division/tpp/actionplan-truck-parking-el-paso-west-texas.pdf>.

Figure 34 – Ownership of Truck Parking Facilities in the United States and in Missouri



Source: FHWA; MoDOT, Truck Parking Websites and Applications; GFT Inventory Analysis, 2025.

Figure 35 – Missouri's Truck Parking Supply Locations and Spaces, 2024

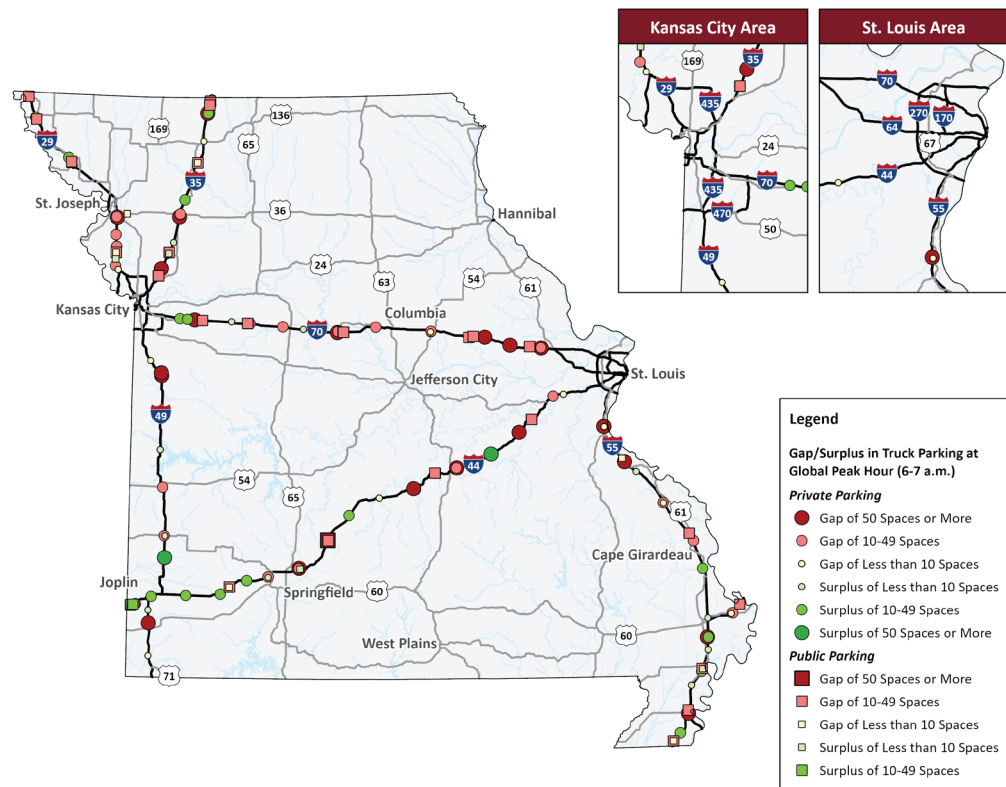


Source: MoDOT, Truck Parking Websites and Applications; GFT Inventory Analysis; CDM Smith Demand Analysis, 2025.



In Missouri, truck parking demand exceeds supply between midnight and 11 a.m. The peak hour of demand is 6 to 7 a.m. As depicted in **Figure 36**, at this hour, 88% of public truck parking areas are at or exceed capacity. During the peak hour at private facilities, 61% are at or above capacity. Of I-70 private parking, 85% of lots are at least 90% full.

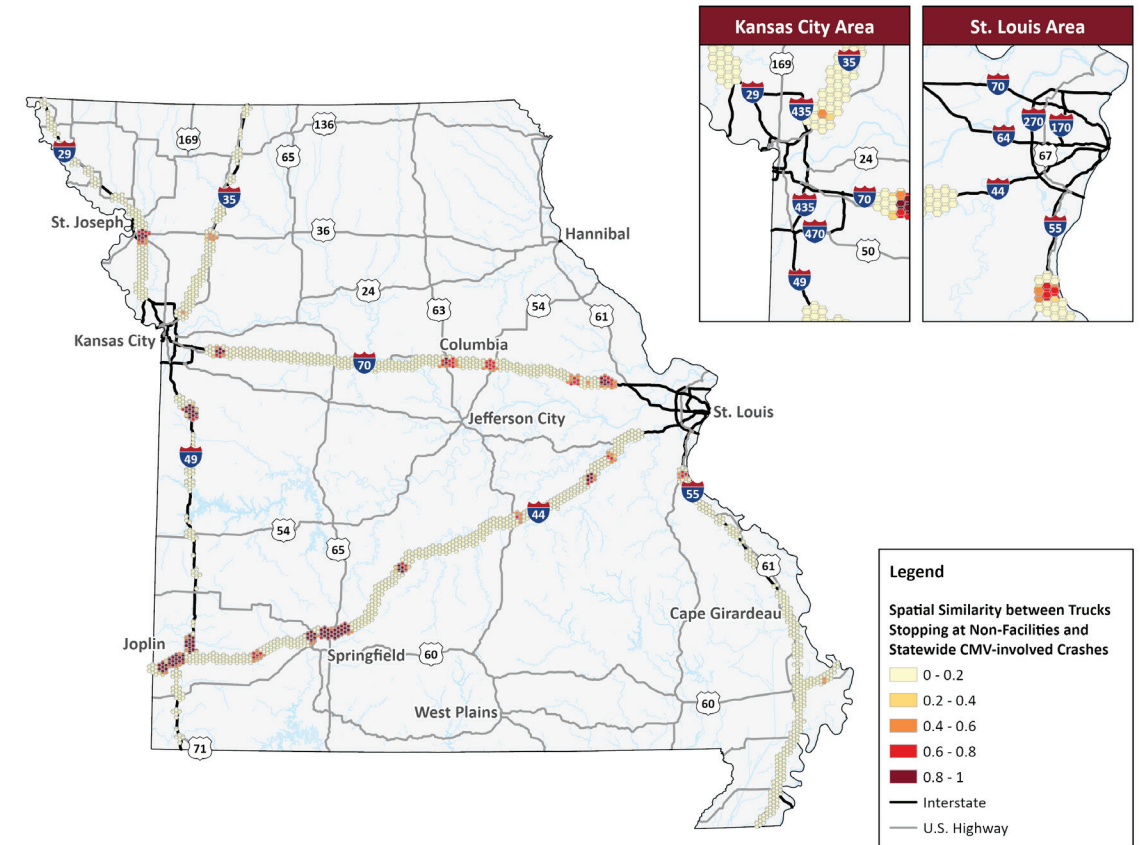
Figure 36 – Public and Private Truck Parking Global Peak Hour Gap and Surplus



Source: MoDOT, Truck Parking Websites and Applications; GFT Inventory Analysis, 2025; CDM Smith Demand Analysis, 2025.

Safety hotspots shown in **Figure 37**, are the result of comparing the sites of crashes involving commercial motor vehicles with the locations of often used, non-facility truck parking areas such as shoulders and ramps. Where the correlation is strong, additional truck parking supply has the potential to reduce fatigue and parked truck-related crashes.

Figure 37 – Statewide Similarity of Non-Facility Parking Demand Hot Spots and 2020–2024 Commercial Motor Vehicle Involved Crash Hot Spots



Source: American Transportation Research Institute (ATRI), 2024; MoDOT Commercial Motor Vehicle (CMV) Involved Crash Data, 2020-2024; GFT Inventory Analysis; CDM Smith Demand Analysis, 2025.



Source: MoDOT



Truck Parking Outreach

While data captures truck parking behavior, engaging with drivers broadens the understanding of truck parking issues. MoDOT connected with truck drivers through a web-based survey and spoke with drivers and industry experts to gather additional information and to confirm findings.



Source: MoDOT

Trends Affecting Future Truck Parking

Increasing Freight Volumes

An increasing share of the growing freight volume forecasted for Missouri indicates parking supply gaps will also increase from 875 public spaces in 2024 to 1,450 spaces in 2050 and from 2,542 private spaces in 2024 to 5,010 spaces in 2050.

Connected and Autonomous Vehicles

Connected and Autonomous Vehicles (CV/AV) technologies are rapidly advancing in the private sector and research institutions. Benefits of connected vehicle technology include safety, reliability and mobility, modernization of infrastructure and sustainability through reduced idling and eco-friendly travel choices.

If CV/AVs grow to dominate highway freight, the ability to operate on a nearly 24-hour basis could reduce demand for traditional truck parking. However, experts say that day is many years away, due to remaining technological challenges, variation among states' laws and regulations and a forecasted growth in trucking demand that could require the use of both traditional and autonomous vehicles.

Truck Parking Management Systems

Making best use of the existing parking spaces is the aim of Truck Parking Information Management System (TPIMS) and Truck Parking Availability Systems (TPAS) efforts. Many states are piloting technology-based solutions. Some early TPIMS/TPAS adopter states identified issues related to reliability and long-term maintenance.

Missouri trucking industry stakeholders consistently noted a preference for a significant increase in the truck parking inventory prior to implementation of an electronic system. Until parking spaces are added, monitoring other states' efforts can help the MoDOT find best practices and technologies, should it decide to commit to a TPIMS/TPAS system.



Regional Distribution and Nearshoring of Supply Chains

The explosive growth of e-commerce and supply chain disruptions attributed to the COVID-19 pandemic reshaped long-established national and international trade patterns. Sourcing goods from Canada, Mexico, Central America, the Caribbean and South America combats risks associated with cultural variation and long transport times.

Mexico passed China as the largest U.S. trading partner in 2023.³⁶

Missouri’s central location helps attract logistical businesses. From Missouri, goods can arrive from and reach more than half of the continental U.S. in one day’s drive. Most other states are reachable in less than two.³⁷ As regional distribution centers rise, demand for staging parking near the facilities grows. Overnight parking is also in high demand as long-haul traffic moves through Missouri to and from international gateways at the Canadian and Mexican borders and Gulf ports.

Cargo Theft in Trucking

The U.S. Department of Homeland Security estimates nationwide annual cargo theft losses of \$15-35 billion.³⁸ Organized theft groups, criminal organizations that target freight carried by rail and truck, are responsible for the great majority of the loss.

Cargo is mainly exposed to theft during transit and handoffs like at warehouses, carrier terminals, parking lots and truck stops. Missouri is not a hotspot for cargo theft according to law enforcement officers and stakeholders contacted as part of this study. As cargo thieves are quick to adapt their methods, this might not remain the case.

³⁶U.S. Census Bureau, “Top Trading Partners – December 2023,” accessed June 11, 2025, <https://www.census.gov/foreign-trade/statistics/highlights/top/top2312yr.html>.

³⁷Missouri Partnership, “Missouri is a Booming Epicenter of Commerce,” accessed June 11, 2025, <https://missouripartnership.com/why-missouri/perfect-location/>.

³⁸U.S. Immigration and Customs Enforcement (ICE), “Operation Boiling Point,” last modified August 25, 2025, <https://www.ice.gov/about-ice/hsi/news/hsi-insider/op-boiling-point>.

Innovations to Address the Truck Parking Gap

Enterprising businesses are addressing the truck parking issue. These range from parking management companies monetizing some previously free parking spaces, to private landowners’ creation of parking-only facilities, to third-party apps that allow drivers to crowd-share parking availability information.

Public-private partnerships also allow the public and private sectors to contribute their unique strengths to address the truck parking shortage. State DOTs or local government entities can provide land, regulatory support and initial funding for parking projects. Private companies bring innovation, management expertise and funding to the table.

Good lighting counters feelings of vulnerability. “If you don’t feel safe, you won’t rest well — and that affects performance.”

— Driver interview

Key Points from Driver Interviews

Staging needs are most critical in metropolitan areas, however industrial and logistical centers in rural Missouri draw significant commercial truck traffic.

Drivers and safety officers listed features and amenities they appreciate:

- Lighting for visibility and security
- Weather warning systems and shelters
- Angled, pull-in/pull-through parking
- Curb-free parking areas
- Vault toilets — when use frees funding for more truck parking spaces
- Maximized space especially, for truck parking and dedicated areas for large loads
- Promotion of weigh stations as parking areas
- Longer acceleration and deceleration lanes
- More truck parking in/near urban areas



Industry parking concerns include:

- Industrial areas and distribution centers with little or no parking within/nearby
- Mixed responses regarding TPIMS and TPAS

Best practices identified by these groups include:

- The Kentucky Transportation Cabinet’s “Rest Havens” at several weigh stations
- Indiana and Ohio’s thoughtfully rebuilt rest areas








Source: MoDOT

Chapter 6. Needs Assessment

Missouri’s role as a national freight crossroads makes it essential to evaluate both current freight conditions and the ability of the state’s multimodal system to meet future demand. Freight volumes are projected to grow significantly over the next two decades, shaped by shifts in commodity flows, emerging technologies and evolving supply chains. This growth presents both opportunities and challenges for Missouri’s highways, railroads, waterways and air cargo facilities.

The purpose of this section is to provide a comprehensive needs assessment and freight forecast that:

-  Establishes a baseline profile of current freight activity using 2023 Transearch data
-  Identifies projected freight flows through 2043, including modal trends and commodity shifts
-  Compares current system capacity to forecasted demand, highlighting infrastructure bottlenecks, regional pressures and at-risk corridors
-  Assesses emerging trends, such as e-commerce, near-shoring, connected and automated vehicles and energy transitions, that will influence Missouri’s future freight system
-  Links performance gaps and capacity constraints to the SFRP’s goals and objectives of promoting a Stewardship-driven, Safe, Prosperous, Reliable, Connected and Innovative freight system

This analysis serves as the foundation for identifying targeted investments and strategies to enable Missouri’s freight network to remain resilient, competitive and responsive to future economic growth. By understanding where the system is today, how it is projected to evolve and where pressures will emerge, Missouri can align its freight and rail strategies with both statewide priorities and national freight trends.



Current Freight Volumes

Missouri’s multimodal transportation system moved over 1.10 billion tons of freight in 2023, underscoring its role as a critical hub for regional, national and international supply chains. Understanding these current volumes are essential to assessing system performance and identifying future needs. The data presented in this section is derived from 2023 Transearch data to provide a comprehensive view of freight activity across the state.

The discussion is organized into subsections by mode: truck, rail, water and air. For each mode, tables summarize total inbound, outbound, intrastate and through volumes in terms of tonnage and value. Additional tables highlight the top five commodities transported by that mode, reported in two-digit Standard Transportation Commodity Codes (STCCs) to provide a consistent basis for comparison across commodity groups.

This current freight profile establishes the baseline conditions against which future growth projections and needs assessments are evaluated, providing insight into how each mode contributes to the overall performance of Missouri’s freight transportation system.

Highway

Highways carry most of Missouri’s freight in both value and tonnage, reflecting the state’s central location and extensive interstate network. **Table 23** and **Table 24** below summarize truck-based freight activity by movement type and identify the top five commodities transported by truck in 2023.

Table 23 – Missouri Highway Freight Movement, 2023

| Freight Movement | Tons (000’s) | Value (\$M) |
|------------------|----------------|------------------|
| Inbound | 94,976 | 128,417 |
| Outbound | 133,201 | 157,138 |
| Throughput | 297,929 | 627,950 |
| Intrastate | 98,213 | 53,302 |
| Total | 624,319 | \$966,807 |

Source: GFT Analysis of Transearch Data, 2023.

Table 24 – Missouri Top Five Commodities Transported by Truck, 2023

| Ranking | Commodity | Tons (000’s) |
|---------|----------------------------|--------------|
| 1 | Nonmetallic Minerals | 156,338 |
| 2 | Farm Products | 115,769 |
| 3 | Food or Kindred Products | 89,230 |
| 4 | Secondary Traffic | 60,082 |
| 5 | Petroleum or Coal Products | 40,696 |

Source: GFT Analysis of Transearch Data, 2023.

Rail

Missouri’s freight rail system plays a vital role in moving bulk commodities such as coal, farm products and chemicals. **Table 25** and **Table 26** present 2023 rail volumes by movement type and highlight the top commodities supported by rail.

Table 25 – Missouri Rail Freight Movement, 2023

| Freight Movement | Tons (000’s) | Value (\$M) |
|------------------|----------------|----------------|
| Inbound | 57,682 | 54,181 |
| Outbound | 32,609 | 48,967 |
| Throughput | 247,087 | 557,522 |
| Intrastate | 7,518 | 1,993 |
| Total | 344,897 | 662,663 |

Source: GFT Analysis of Transearch Data, 2023.



Table 26 – Missouri Top Five Commodities Transported, 2023

| Ranking | Commodity | Tons (000's) |
|---------|------------------------------|--------------|
| 1 | Coal | 97,453 |
| 2 | Farm Products | 49,556 |
| 3 | Chemicals or Allied Products | 47,398 |
| 4 | Food or Kindred Products | 46,682 |
| 5 | Misc Mixed Shipments | 29,140 |

Source: GFT Analysis of Transearch Data, 2023.

Waterway

The Mississippi and Missouri Rivers continue to support barge movements of bulk commodities, particularly farm products and construction materials. Waterway volumes and top commodities for 2023 are shown below in **Table 27** and **Table 28**.

Table 27 – Missouri Waterway Freight Movement, 2023

| Freight Movement | Tons (000's) | Value (\$M) |
|------------------|---------------|---------------|
| Inbound | 5,857.90 | 4,603 |
| Outbound | 27,052.70 | 5,974 |
| Throughput | 13,250.60 | 8,388 |
| Intrastate | 4,988.80 | 255 |
| Total | 51,150 | 19,220 |

Source: GFT Analysis of Transearch Data, 2023.

Table 28 – Missouri Top Five Commodities Transported by Water, 2023

| Ranking | Commodity | Tons (000's) |
|---------|---------------------------------|--------------|
| 1 | Farm Products | 17,466 |
| 2 | Nonmetallic Minerals | 12,688 |
| 3 | Clay, Concrete, Glass, or Stone | 6,430 |
| 4 | Chemicals or Allied Products | 4,659 |
| 5 | Petroleum or Coal Products | 3,467 |

Source: GFT Analysis of Transearch Data, 2023.



Source: MoDOT



Air Cargo

Although representing a small share of total tonnage, air cargo supports the movement of high-value and time-sensitive goods. **Table 29** and **Table 30** below show Missouri’s 2023 air cargo volumes and leading commodities.

Table 29 – Missouri Air Cargo Movement, 2023

| Freight Movement | Tons (000’s) | Value (\$M) |
|------------------|--------------|--------------|
| Inbound | 106 | 3,620 |
| Outbound | 100 | 3,577 |
| Throughput | 0 | 1 |
| Intrastate | 1 | 48 |
| Total | 207 | 7,246 |

Source: GFT Analysis of Transearch Data, 2023.

Table 30 – Missouri Top Five Commodities Transported by Air, 2023

| Ranking | Commodity | Tons (000’s) |
|---------|----------------------------------|--------------|
| 1 | Small Packaged Freight Shipments | 72.60 |
| 2 | Transportation Equipment | 18.40 |
| 3 | Electrical Equipment | 18.10 |
| 4 | Chemicals or Allied Products | 13.20 |
| 5 | Machinery | 12.60 |

Source: GFT Analysis of Transearch Data, 2023.

Future Freight Volumes

Looking ahead, Missouri’s multimodal transportation system is projected to handle nearly 1.30 billion tons of freight by 2043, reflecting continued growth in both traditional bulk commodities and higher-value manufactured goods. These forecasts, derived from Transearch data, provide insight into how freight demand is expected to evolve across modes and commodity groups over the next two decades.

As with the current freight volumes analysis, this section is organized into subsections by truck, rail, water and air. For each mode, tables present projects inbound, outbound, intrastate and through volumes in terms of tonnage and value. Additional tables highlight the top five commodities by mode in 2043, reported in two-digit STCCs to maintain comparability with current data.

These projections establish a forward-looking baseline for the needs assessment, highlighting where Missouri’s freight network will need to expand capacity, improve reliability and strengthen multimodal connections to support economic growth and maintain competitiveness in a changing marketplace.

Highway

Highways are projected to continue carrying most of Missouri’s freight by 2043, with growth driven by both bulk and manufactured goods. **Table 31** and **Table 32** below summarize projected truck freight activity and highlight the top five commodities by tonnage.

Table 31 – Projected Missouri 2043 Highway Freight Movement, 2023

| Freight Movement | Tons (000’s) | Value (\$M) |
|------------------|----------------|------------------|
| Inbound | 121,027 | 173,370 |
| Outbound | 157,886 | 204,740 |
| Throughput | 372,222 | 877,846 |
| Intrastate | 114,088 | 63,924 |
| Total | 765,223 | 1,319,880 |

Source: GFT Analysis of Transearch Data, 2023.



Table 32 – Projected Missouri 2043 Top Five Commodities Transported by Truck, 2023

| Ranking | Commodity | Tons (000's) |
|---------|------------------------------|--------------|
| 1 | Nonmetallic Minerals | 180,776 |
| 2 | Farm Products | 146,031 |
| 3 | Food or Kindred Products | 116,734 |
| 4 | Secondary Traffic | 74,019 |
| 5 | Chemicals or Allied Products | 43,928 |

Source: GFT Analysis of Transearch Data, 2023.

Rail

Rail freight in Missouri is expected to experience notable shifts, with declines in coal offset by growth in chemicals, food products and transportation equipment. **Table 33** and **Table 34** below present projected 2043 rail volumes and leading commodities.

Table 33 – Projected Missouri 2043 Rail Freight Movement, 2023

| Freight Movement | Tons (000's) | Value (\$M) |
|------------------|----------------|----------------|
| Inbound | 37,487 | 76,817 |
| Outbound | 34,917 | 61,669 |
| Throughput | 280,634 | 781,316 |
| Intrastate | 2,879 | 2,323 |
| Total | 355,917 | 922,125 |

Source: GFT Analysis of Transearch Data, 2023.

Table 34 – Projected Missouri 2043 Top Five Commodities Transported by Rail, 2023

| Ranking | Commodity | Tons (000's) |
|---------|------------------------------|--------------|
| 1 | Chemicals or Allied Products | 74,434 |
| 2 | Food or Kindred Products | 73,958 |
| 3 | Farm Products | 60,220 |
| 4 | Misc Mixed Shipments | 40,055 |
| 5 | Transportation Equipment | 20,512 |

Source: GFT Analysis of Transearch Data, 2023.

Waterway

Missouri's inland waterways will remain essential for the movement of bulk commodities, especially farm products and nonmetallic minerals. **Table 35** and **Table 36** below show projected 2043 barge volumes and top commodities.

Table 35 – Projected 2043 Missouri Waterway Freight Movement, 2023

| Freight Movement | Tons (000's) | Value (\$M) |
|------------------|---------------|---------------|
| Inbound | 6,837 | 5,970 |
| Outbound | 34,120 | 8,085 |
| Throughput | 11,684 | 8,280 |
| Intrastate | 5,915 | 256 |
| Total | 58,558 | 22,591 |

Source: GFT Analysis of Transearch Data, 2023.



Table 36 – Projected Missouri 2043 Top Five Commodities Transported by Water, 2023

| Ranking | Commodity | Tons (000's) |
|---------|---------------------------------|--------------|
| 1 | Farm Products | 20,143 |
| 2 | Nonmetallic Minerals | 16,140 |
| 3 | Chemicals or Allied Products | 6,845 |
| 4 | Clay, Concrete, Glass, or Stone | 6,523 |
| 5 | Petroleum or Coal Products | 2,702 |

Source: GFT Analysis of Transearch Data, 2023.

Air

Air cargo volumes, while comparatively small in tonnage, are expected to grow in value as high-value, time-sensitive goods continue to expand. **Table 37** and **Table 38** present Missouri’s projected 2043 air freight activity and leading commodities.

Table 37 – Projected Missouri 2043 Air Cargo Movement, 2023

| Freight Movement | Tons (000's) | Value (\$M) |
|------------------|--------------|--------------|
| Inbound | 153 | 5,302 |
| Outbound | 125 | 4,076 |
| Throughput | 0 | 2 |
| Intrastate | 2 | 74 |
| Total | 280 | 9,454 |

Source: GFT Analysis of Transearch Data, 2023.

Table 38 – Projected Missouri 2043 Top Five Commodities Transported by Air, 2023

| Ranking | Commodity | Tons (000's) |
|---------|---|--------------|
| 1 | Small Packaged Freight Shipments | 84 |
| 2 | Transportation Equipment | 27 |
| 3 | Electrical Equipment | 27 |
| 4 | Instruments, Photo Equipment, Optical Equipment | 25 |
| 5 | Chemicals or Allied Products | 21 |

Source: GFT Analysis of Transearch Data, 2023.

Emerging Trends

Missouri’s freight system will be shaped not only by projected growth in tonnage and value but also by several structural shifts in how goods are produced, distributed and consumed. These emerging trends will influence freight flows across all modes and require adaptive planning to enable the system to remain resilient and competitive.

E-Commerce and Last-Mile Delivery

The rapid growth of e-commerce is driving an increase in parcel shipments and fundamentally altering urban freight dynamics. Last-mile delivery has become a critical component of supply chains, placing new demands on local road networks and distribution facilities, particularly in metropolitan areas like St. Louis and Kansas City. Managing congestion, curb access and delivery efficiency will be key challenges.



Source: MoDOT



Near Shoring and Regional Supply Chains

Global supply chain disruptions and rising transportation costs are accelerating the trend toward near-shoring and regional production. For Missouri, this shift could reshape inbound and outbound flows, with more intermediate goods and components moving within North America rather than overseas. Trade corridor patterns may adjust accordingly, reinforcing the importance of Missouri's highway and rail connectivity to Mexico and Canada.



Connected and Autonomous Vehicles (CAVs)

Autonomous trucking is rapidly transitioning from pilot testing to active commercial deployment across the U.S. Several long-haul AV developers — including Aurora, Kodiak, Waymo and Plus — are now operating automated Class-8 tractors on major interstate corridors in Texas, Arizona, New Mexico, Colorado, Wyoming, Oklahoma and other Sun Belt states. These trucks are already traveling coast-to-coast routes that pass through Missouri, but due to current Missouri statute requiring a human driver behind the wheel, fully driverless operation cannot occur within state boundaries. As a result, AV-equipped trucks currently perform “state-line handoffs”, stopping at Missouri's borders to switch to human drivers before continuing their route. This mirrors long-standing oversize/overweight permitting practices where operators must comply with differing state-by-state regulations.

Despite common assumptions, AV tractors have performed reliably in harsh operating conditions, including snow, wind and reduced visibility — and avoid human overcorrection or fatigue-related deceleration. However, current technology and regulations limit autonomous operation to interstate corridors, meaning human drivers remain essential for first-mile and last-mile movements to ports, rail terminals, airports and distribution centers. Industry experts underscore that widespread AV adoption will actually increase the need for short-haul and regional drivers, particularly for the “last-leg” movements that AVs cannot complete autonomously. Additionally, remote-operations centers, where trained staff can intervene digitally during unusual events, are becoming a critical workforce component, suggesting new job types that may emerge in Missouri.

Stakeholder outreach reinforced these trends and revealed additional AV-related

considerations across modes. Rail operators described growing use of autonomous and semi-autonomous inspection systems, including drone-assisted inspections and automated geometry cars that reduce worker exposure and improve safety.

Port stakeholders noted early movement toward autonomous yard tractors and automated gate operations, reflecting a broader industry trend toward partial terminal automation.

Aviation representatives identified the potential for autonomous ground-service equipment in the future, particularly in cargo-handling environments. Trucking industry stakeholders emphasized that inconsistent work-zone layouts, irregular signage and constrained lane widths pose difficulties not only for human drivers but also for AV perception systems, highlighting the need for more uniform work-zone standards as automation expands. They also stressed that AV long-haul operations will likely shift freight patterns, requiring designated staging locations near urban freight hubs where AVs transition to human drivers. This aligns with national practice in AV-active states, where Department of Transportation (DOT)s are beginning to plan for driver-change facilities near key interchanges. Collectively, stakeholder input suggests that autonomous technologies will shape workforce needs, last-mile logistics, infrastructure consistency and intermodal coordination across Missouri's freight network.

As AV deployment expands nationally, the most significant needs for Missouri are policy readiness, interagency coordination and the future establishment of driver transfer or staging locations near major freight markets. Other states advancing AV trucking have created governor-appointed task forces that include DOTs, highway patrol, emergency responders, insurers and AV operators to develop safety protocols, emergency response procedures and communications plans. Missouri will need similar coordination to prepare for AV integration while maintaining law enforcement familiarity, incident response procedures and public awareness. Because AV firms increasingly rely on remote operations personnel who can intervene digitally during unexpected events, Missouri may also see emerging workforce opportunities in remote driving assistance, safety monitoring and operations centers. As these technologies mature, freight operations along key routes like I-70 and I-44 will increasingly benefit from enhanced connectivity and automation.

Artificial Intelligence

Artificial Intelligence (AI) is rapidly transforming freight operations and transportation system management and Missouri stakeholders are beginning to adopt or explore these technologies across multiple modes. During modal outreach, Class I railroads highlighted their growing use of AI-enabled safety systems, including acoustic wayside detectors, automated track inspection, wheel-profile analytics and predictive maintenance tools, technologies that reduce derailment risk and support FRA's broader shift toward risk-based safety oversight. Aviation



stakeholders expressed interest in AI for cargo-handling optimization, aircraft and equipment predictive maintenance and improved operational forecasting, particularly as mid-size airports expand their air cargo role. Ports and waterway operators noted opportunities to use AI for terminal yard management, crane scheduling, drone-based inspections and navigation forecasting during high-water events.

For highway freight operations, AI is increasingly used for incident detection, predictive analytics, work-zone monitoring and advanced routing, as documented by FHWA and USDOT. Trucking industry stakeholders emphasized that travel-time unpredictability and inconsistent work-zone layouts create challenges for both human drivers and perception-based automated systems. They expressed interest in AI applications that improve construction-zone communication, freight visibility and corridor reliability. Integrating these capabilities into MoDOT's Transportation Management Center (TMC) could support faster incident response, enhance freight safety and strengthen travel-time reliability on critical corridors. Over time, AI-enabled analytics will also improve MoDOT's ability to monitor freight performance, identify emerging bottlenecks and prioritize investments more effectively across the statewide network.

Commodity Shifts

Evolving commodity markets will also shape future freight volumes. Agricultural exports are expected to remain a cornerstone of Missouri's economy, while growth in advanced manufacturing, energy transitions and food processing will drive changes in mode choice and logistics patterns. Declines in coal and petroleum movements contrast with increases in higher-value goods such as chemicals, transportation equipment and refrigerated products.

Overall Freight Growth

By 2043, Transearch projects nearly 1.30 billion tons of freight moving through Missouri's multimodal system. Growth will not be uniform; truck freight is anticipated to capture the largest share of increases, while rail and water remain essential for bulk commodities. Sector-specific dynamics, particularly in manufacturing, distribution and agriculture, will define how this growth is distributed across modes and regions.

Together, these trends underscore the need for a flexible and future-ready freight system that can adapt to technological change, evolving supply chains and shifting commodity flows. Missouri's ability to respond proactively will be central to maintaining its role as a national freight crossroads.

Comparing Current System Performance to Future System

Performance measures provide Missouri with a critical lens for evaluating how today's multimodal freight system is functioning and where future demand will place additional pressure on capacity, safety and reliability. By benchmarking current volumes against projected 2043 freight flows, decision-makers can better understand how Missouri's system is positioned to meet the challenges of a growing and evolving freight economy. The following subsections compare current system performance with expected future performance for highways, rail, waterways and air cargo. For each mode, Transearch tonnage and value projections are paired with the SFRP goals and objectives to identify where performance gaps may emerge and what areas will require targeted investment. This comparison highlights both existing strengths and future vulnerabilities in Missouri's multimodal freight network.



Source: MoDOT



Highway Freight: Current to Future Performance

Missouri maintains the seventh-largest state highway system in the nation, with more than 33,800 miles of roadway and over 10,000 bridges. Highways carry most of the freight in Missouri, approximately 55% of statewide tonnage in 2023. Pavement conditions remain relatively strong, with about 89% of major highways rated in good condition. However, recurring congestion, truck parking shortages and first-/last-mile bottlenecks continue to constrain efficiency. Metro areas remain primary freight congestion hotspots, with estimated statewide congestion costs reaching approximately \$630 million in 2023.

Highways are the backbone of Missouri's freight network, carrying over 624 million tons in 2023 and projected to grow to more than 765 million tons by 2043. Growth is expected across both bulk and manufactured goods, with significant increases in food products, farm products and secondary traffic. In response to growing freight and passenger demand, Missouri is making a historic investment in its highway system, including the addition of a third lane along I-70, which is expected to significantly improve capacity, reliability and safety on one of the state's most critical freight corridors.

Implications for Performance:

- **Reliable:** While the addition of a third lane along I-70 represents a historic investment that is expected to significantly improve corridor capacity and reliability, projected growth in truck volumes will continue to place pressure on key freight corridors. Even with the historic addition of a third lane along I-70. Bottlenecks are likely to persist at interchanges, urban approaches and other major routes such as I-44, requiring continued focus on system wide reliability.
- **Stewardship:** Higher freight tonnage will place additional strain on pavement and bridge conditions, increasing life-cycle maintenance costs.
- **Safe:** More truck activity, combined with last-mile delivery growth in urban areas, heightens safety risks for vulnerable road users.
- **Connected:** First- and last-mile connectivity to freight generators will be critical as demand grows.

Waterway Freight: Current to Future Performance

Missouri hosts the 11th-largest rail network in the U.S., with about 3,800 miles of track served by five Class I railroads and 15 short lines. Rail moves roughly 30% of Missouri's freight by weight, anchored by the Kansas City and St. Louis hubs, two of the nation's most significant

rail centers. Network conditions are generally strong, but chokepoints persist in urban areas where intermodal terminals, low-clearance bridges and at-grade crossings constrain efficiency. Missouri has more than 3,300 public crossings, posing ongoing safety risks despite declining blocked crossing incidents since 2021.

Rail carried nearly 345 million tons in 2023 and is projected to rise slightly to 356 million tons by 2043. The commodity mix, however, is expected to shift dramatically: coal tonnage will decline, while chemicals, food products and transportation equipment increase.

Implications for Performance:

- **Prosperous:** Rail's role in supporting Missouri's agricultural and manufacturing competitiveness continues as commodity flows shift.
- **Reliable:** Growth in higher-value freight requires ongoing investment in intermodal terminals and short-line resilience.
- **Innovative:** Rail carriers' deployment of advanced safety and scheduling technologies will maximize efficiency
- **Waterway Freight:** Current to Future Performance Missouri's 1,050 miles of navigable rivers and 19 public port authorities play a vital role in supporting agriculture and bulk commodity movement. In 2023, 51.10 million tons of freight moved by water. However, reliability is increasingly constrained by aging infrastructure, with locks and dams on the Mississippi River average more than 75 years old, with average delays at key locks ranging from one to five hours.

By 2043, tonnage on Missouri's waterways is projected to increase to nearly 59 million tons. Farm products and nonmetallic minerals will continue to dominate waterborne freight, underscoring the importance of maintaining channel depth and lock reliability to enable dependable barge operations.

Implications for Performance:

- **Stewardship:** Maintaining channel depth and lock reliability will be essential to supporting continued barge traffic.
- **Reliable:** Adapting infrastructure strategies to reduce weather-related disruptions to waterway reliability.
- **Connected:** Strengthening intermodal links at ports will help waterways complement rail and truck freight, particularly in serving export markets.



Air Cargo: Current to Future Performance

Air cargo serves a specialized but high-value segment of Missouri's freight economy. Major operations are concentrated at St. Louis Lambert International (STL), Kansas City International (MCI) and Springfield-Branson National (SGF), with several regional airports supporting cargo movement. In 2023, air freight totaled approximately 207,000 tons valued at \$7.20 billion. The system is not significantly constrained by infrastructure conditions but remains sensitive to demand fluctuations and broader supply chain dynamics. By 2043, air cargo is projected to increase to 280,000 tons valued at \$9.50 billion — a 35% increase in tonnage and nearly one-third increase in value.



Implications for Performance:

- **Prosperous:** Growth in e-commerce and high-value goods strengthens Missouri's role in global supply chains, particularly near STL and KCI airports.
- **Connected:** Stronger ground access to airports will be necessary to enable seamless multimodal freight movement.
- **Innovative:** Integration of automation, advanced logistics hubs and improved airside facilities will be key to meeting future demand.

Summary

Comparing current and future freight volumes across all modes underscores Missouri's role as a multimodal freight hub and highlights the pressures that will mount as nearly 1.30 billion tons of goods move through the state by 2043. Highways will continue to bear the brunt of growth, rail will evolve with changing commodity markets, waterways will remain vital for bulk exports and air cargo will expand as a high-value niche. Tying these changes back to the SFRP goals and objectives emphasizes the need for Missouri to:

- Invest in reliability by addressing highway bottlenecks and strengthening multimodal resilience.
- Advance stewardship through proactive maintenance and sustainable infrastructure strategies.
- Promote safety for both heavy truck corridors and vulnerable users in urban freight environments.
- Support a prosperous economy by adapting to commodity shifts and capitalizing on high-value logistics sectors.
- Strengthen connectivity across first-/last-mile freight links, ports and airports.
- Pursue innovation through technology adoption and funding strategies that support long-term competitiveness.

Comparison of System Capacity to Forecasted Volumes

Missouri's multimodal freight system is projected to handle nearly 1.30 billion tons of freight by 2043, a 14% increase over 2023 levels. While this growth underscores the state's importance as a national freight hub, it also highlights areas where system capacity may not keep pace with future demand. The following subsections identify gaps between current performance and forecasted volumes, focusing on modal capacity constraints, regional infrastructure needs and risk areas where bottlenecks or underperformance are most likely.

Gaps Between Current Performance and Future Demand

Highways:

- Truck volumes are projected to increase by more than 140 million tons between 2023 and 2043, amplifying pressure on Missouri's interstate corridors, especially I-70, I-44, I-435, I-29, I-55, I-35 I-49 and I-270.
- Existing bottlenecks in Kansas City, St. Louis and Springfield will worsen, threatening reliability and safety.



- First-/last-mile connections around distribution hubs will become more strained by growth in e-commerce and parcel shipments, risking gaps in connected objectives.

Rail:

- Shifting commodity patterns—from coal to chemicals, food products and transportation equipment—will place new demands on intermodal capacity.

Aging short line infrastructure may prevent railroads from handling heavier axle loads or growing agricultural exports without investment, creating a stewardship gap.

Waterways:

- Channel maintenance and lock/dam reliability will determine system performance, even though projected tonnage growth is modest.
- Weather variability introduces risk to navigation reliability, potentially undercutting Missouri’s competitive advantage in barge transport.

Air:

- Capacity at major airports may be adequate for projected tonnage, but ground access, warehouse space and cargo handling facilities could be limiting factors.
- Growth in small-package freight will stress connected objectives unless roadway and distribution access improvements are made.

Modal Capacity Constraints

- **Highways:** Without capacity expansion or demand management, congestion on I-70 and I-44 corridors is likely to reduce reliability and increase costs for shippers. constraint, particularly during extreme weather events.
- **Rail:** Intermodal terminal capacity (e.g., Kansas City) may not be sufficient for projected growth in manufactured goods.
- **Air:** Cargo handling and logistics integration, rather than runway capacity, represent the main constraint for Missouri’s air freight system.
- **Waterways:** Infrastructure reliability (locks, levees, dredging) remains a

Infrastructure Needs by Region

- **St. Louis Region:** Key interstate bottlenecks, Mississippi River navigation reliability and urban last-mile delivery pressures should be primary focus.
- **Kansas City Region:** Intermodal rail hubs and interstate congestion points are critical to future freight reliability.
- **Southwest Missouri (Springfield/Joplin):** Growth along I-44 freight corridor requires targeted capacity and safety enhancements.
- **Rural Corridors:** Short line rail and rural highway connections will need investment to maintain access to agricultural markets.

Risk Areas and Bottlenecks

- **Urban vs. Rural Stress:** Urban areas will face congestion and safety pressures from truck and parcel growth, while rural areas risk underinvestment in short line railroads, bridges and two-lane freight routes. interchange activity may continue to influence performance, particularly near urban areas.
- **Key Corridors at Risk:**
 - **I-70:** Projected truck volume growth will continue to place pressure on one of the state’s most heavily traveled freight corridors. While the addition of a third lane is expected to significantly improve capacity and reliability along I-70, long-term growth in freight demand and
 - **I-44:** Growth in farm products and manufactured goods will test capacity and safety performance.
 - **Mississippi River navigation:** Lock and dam reliability remains a single point of failure for barge traffic.
 - **Kansas City and St. Louis intermodal facilities:** Terminal capacity may fall behind demand for trail-truck transfers.

Summary

Missouri’s freight network is well-positioned to handle projected growth overall, but without strategic investments, several gaps will emerge between system capacity and forecasted demand. Highways face the greatest challenges, with rail, waterways and air cargo also requiring targeted upgrades to maintain reliability, safety and competitiveness. Identifying and addressing these gaps will be essential to achieving the SFRP goals of a prosperous, reliable and connected multimodal freight system.



Summary of Findings

Missouri's multimodal freight system is a cornerstone of the state's economy, moving over 1.10 billion tons of freight in 2023 and projected to handle nearly 1.30 billion tons by 2043. Growth will be driven by both bulk commodities, such as farm products and nonmetallic minerals and higher-value manufactured goods, including chemicals, transportation equipment and small packaged freight.

Each mode will face distinct challenges:

- Highways will continue to carry the majority of freight. Major investments, including the addition of a third lane along I-70, are expected to improve capacity and reliability; however, rising truck volumes and growth on other key corridors such as I-44 will continue to challenge systemwide performance.
- Rail will experience a commodity shift from coal to higher-value products, with potential strain on short lines and intermodal hubs.
- Waterways will remain vital for agricultural exports but are dependent on resilient lock, dam and channel infrastructure.
- Air Cargo, though small in tonnage, will grow in value, stressing distribution facilities and first-/last-mile access.

Emerging trends such as e-commerce, regional supply chain shifts, connected and automated vehicle adoption and changing commodity markets will further reshape Missouri's freight landscape.



Source: MoDOT

Implications for Freight and Rail Investment Strategies

These findings have direct implications for how Missouri should prioritize freight and rail investments over the next two decades:

- Highways: Invest in capacity, safety and reliability improvements on critical freight corridors (I-70, I-44, I-55 and I-35), while addressing urban congestion and first-/last-mile delivery challenges.
- Rail: Modernize short line rail infrastructure, expand intermodal capacity in Kansas City and St. Louis and support projects that align with commodity shifts toward chemicals, food products and advanced manufacturing.
- Waterways: Support investments in navigation reliability, including dredging, lock and dam maintenance and climate resilience, to protect Missouri's position in agricultural exports.
- Air cargo: Enhance ground access, cargo handling capacity and logistics integration at key airports to accommodate growing demand for time-sensitive, high-value shipments.
- Multimodal connections: Strengthen intermodal hubs and first-/last-mile freight connections to promote efficiency and resiliency across the network.

In line with the SFRP goals of being prosperous, reliable, connected and innovative, Missouri's investment strategies should focus not only on maintaining a state of good repair but also on preparing the freight system to adapt to changing technologies, supply chains and commodity flows. Strategic, data-driven investments will keep freight a powerful economic driver for Missouri while preserving the state's role as a vital national freight crossroads.

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Source: MoDOT

Chapter 7. Freight and Rail Impacts

The Missouri freight transportation network encompasses railroads, highways, bridges, ports, waterways and airports, which can face significant threats from extreme weather. Certain weather events can substantially damage and disrupt the freight network, impacting the infrastructure needed to move goods or stalling the State's economy by preventing goods and services from reaching intended markets. Tornadoes, extreme flooding and winter storms are a few examples of weather hazards that may cause safety issues and operational disruptions. Road closures, railroad shutdowns, port congestion and flight delays are examples of disruptions that impact the economy by increasing delays and imposing safety risks.

Freight transportation is essential to the movement of goods across the country, but its impact extends far beyond logistics and economics. As volume of trucks, trains, barges and planes increases, impacts to people and wildlife also increase. Expansion of infrastructure reduces wildlife habitats and the buffers between it and residents. Freight impacts to the environment can include increased particulate matter in the air, increased noise levels and increased intensity for stormwater runoff carrying debris and chemicals into the water system. Recognizing the cost of the extreme weather's impacts to freight movement and the potential impacts of freight movement on the surrounding environment, Congress incorporated provisions in 49 USC 70202 requiring analysis of these elements in state freight plans. On Jan. 12, 2023, the USDOT published the USDOT State Freight Plan and State Freight Advisory Committee F (the Guidance) identifying the minimum requirements for state freight plans to meet the new statutory requirements from the Infrastructure Investment and Jobs Act (IIJA).³⁹ The Guidance was effective March 8, 2023.

The Guidance requires each plan to include quantifiable goals and strategies to decrease:

- The severity of impacts of extreme weather and natural disasters on freight mobility
- The impacts of freight movement on flooding and stormwater runoff
- The impacts of freight movement on local air pollution.
- The impacts of freight movement on wildlife habitat loss

³⁹USDOT, "State Freight Plan and State Freight Advisory Committee Guidance," issued January 12, 2023, <https://www.transportation.gov/mission/office-secretary/office-policy/guidance-state-freight-plans-and-state-freight-advisory>.



This chapter discusses the impacts of severe weather on the freight system by looking at the resilience of the MoDOT freight network. Freight resilience emphasizes an adaptable freight system that maintains operations and recovers rapidly from disruptions caused by extreme weather events. For infrastructure to withstand weather events, engineering designs/materials or the location of new infrastructure placement is important. Recovery from disruptions can include an initial emergency response as well as managing subsequent recovery actions, such as the emergency procurement of a downed bridge to expedite the delivery of materials for reconstruction. Mitigating impacts from weather hazards on the freight network is vital to improve safety and reduce impacts on the overall freight economy. **Figure 38** demonstrates damage that can occur to critical infrastructure from extreme weather events like flooding.

Then the chapter examines more closely the impacts Missouri's freight transportation system has on the human and wildlife environments. Use of zero emissions equipment, implementation of quiet zones, grade separations and stormwater management techniques can reduce these freight impacts.

Figure 38 – 2019 Flooding Washes Out a Section of U.S. Route 136



Background

Reliability is key in freight movement. States strive to operate resilient transportation networks that can endure and adapt to disruptions such as extreme weather, aging infrastructure, economic shifts and changing freight demands to maintain reliability for users. Missouri's 2022 State Freight Rail Plan reflected this focus through a multimodal strategy that integrated freight and passenger systems while prioritizing infrastructure durability, network redundancy and long-term adaptability. As part of its planning and project delivery processes, MoDOT routinely evaluates each location for safety, functionality, corridor consistency and potential impacts from extreme weather and resilience concerns. In 2018, MoDOT conducted a statewide assessment of National Highway System (NHS) facilities affected by natural disasters that required permanent repairs. This effort was expanded in 2020 with updates to the Transportation Management System (TMS), which now tracks all disaster-impacted locations across NHS and other routes.⁴⁰ These evaluations help MoDOT identify vulnerabilities and guide investments that strengthen the freight network's resilience.



⁴⁰MoDOT, "National Highway System Transportation Asset Management Plan", published June 2022, https://www.modot.org/sites/default/files/documents/Federal%20Transportation%20Asset%20Management%20Plan_508Compliant.pdf.



2022 Missouri State Freight and Rail Plan

The 2022 SFRP Plan (SFRP or the Plan) was the State's first integrated, multimodal blueprint designed to optimize multimodal freight and passenger rail.⁴¹ Resilience was a central pillar throughout the 2022 SFRP, with specific attention to Missouri's ability to withstand and adapt to dynamic challenges such as supply chain disruptions, natural disasters, economic shifts and evolving transportation demands. The 2022 SFRP identified resilience as critical in both freight and passenger systems, emphasizing infrastructure durability, redundancy in networks and adaptability for future trends such as renewable energy and near-shoring. It's resilience strategy also focused on supporting the continuity of essential goods movement and passenger service, particularly in response to vulnerabilities exposed by the COVID-19 pandemic and anticipated energy transitions.

The 2022 SFRP proposed infrastructure improvements like universal crossovers and additional main lines to prevent bottlenecks and improve network redundancy. By embedding environmental, operational and economic resilience into all aspects of freight and rail planning, the 2022 SFRP positioned Missouri to thrive in an uncertain future. The key pieces of resilience from the 2022 SFRP are:

Equity and Environmental Resiliency: Support Equity and Environmental Resiliency of the multimodal freight and passenger rail.

- Support opportunities for alternative fueling infrastructure.
- Support expanded multimodal freight and passenger rail service as a part of an overall state energy conservation policy to protect Missouri travelers and shippers from the adverse mobility and economic impacts of expected increases in future transportation energy costs
- Support expanded multimodal freight and passenger rail service as a means of reducing carbon emissions and fuel consumed per ton and per passenger mile and increasing the system's resiliency and redundancy against extreme weather events.
- Increase passenger rail accessibility to low-income, elderly and special needs groups who have limited access to auto and other modes.

Economy: Support economic growth and competitiveness in Missouri through strategic improvements to the multimodal freight network and passenger rail system.

- Enhance resiliency and develop redundancy for the multimodal freight and passenger rail system to increase reliability in moving passengers and freight.

⁴¹MoDOT, "2022 Missouri State Freight and Rail Plan", published May 2022, <https://www.modot.org/2022-state-freight-and-rail-plandocuments>.

By embedding resilience into its planning framework, Missouri joins other states in developing tailored strategies to address regional challenges. For example, California emphasizes smart technology and disaster preparedness, while Illinois focuses on connectivity and weather-resilient infrastructure. These diverse approaches offer valuable insights into how resilience can be integrated across different freight systems. MoDOT's commitment to reviewing and updating its infrastructure data confirms that resilience remains a central consideration in future investments. Through these efforts, Missouri continues to enhance its freight network's ability to withstand disruptions and support long-term economic growth.

MoDOT 2023 Carbon Reduction Strategy

In Nov. 2023, MoDOT published its Carbon Reduction Strategy (CRS) that was developed in coordination with the metropolitan planning organizations and the regional planning councils.⁴² This strategy is focused on the goals of the IIJA Carbon Reduction Program (CRP) which provides funding for a wide variety of eligible projects geared toward reducing transportation carbon dioxide emissions from on-road highway sources. It focuses on three areas:

- **Energy Management:** reduce Missouri's energy footprint by implementing new technologies such as smart lighting and electrification infrastructure.
- **Non-motorized Transportation:** provide people the opportunity to walk or bike to nearby destinations by constructing new and improved non-motorized facilities.
- **Traffic Flow Improvement:** promote better fuel economy through signal and intersection optimization projects that reduce delays and improve traffic flows.

Strategies aligned with freight movement include:

- Expanding the use of roundabouts to reduce idling vehicles,
- Linking additional traffic cameras to traffic management centers that monitor congestion and incidents for more rapid response to traffic disruptions
- Projects that separate motor vehicles from pedestrians and bicycles.

⁴²MoDOT, Carbon Reduction Strategy, published November 2023, https://www.modot.org/sites/default/files/documents/MoDOT%20CRS_web.pdf.



MoDOT Freight Network and Weather Hazards

The State's extensive infrastructure investment faces disruption threats from extreme weather events such as flooding, winter extremes, heat waves and severe storms. These events can disrupt operations across all freight modes by compromising rail integrity, damaging bridges, disrupting river navigation and hindering logistics center operations. MoDOT actively monitors these risks, implements strategies to reduce their impact and prepares itself to respond effectively when disruptions occur.



Source: MoDOT

Evaluating how extreme weather affects state freight systems is essential for maintaining performance and building long-term resilience. Though not discussed in detail here, the possible disruption of freight movement due to seismic risks from the New Madrid and other fault lines should also be considered.

MoDOT incorporates weather-related changes into its life cycle planning to enable its infrastructure remains reliable over time. With most locations seeing major projects every eight to nine years, the risk of needing premature replacements due to non-performance issues is reduced. This approach allows MoDOT to focus on strategic investments that consider both current and future severe weather challenges. Through planning, MoDOT strengthens the freight network's ability to withstand and adapt to evolving environmental conditions.

Weather Hazards

Weather hazards are natural events that create risks to human life, the environment and property. Common weather hazards in Missouri include tornadoes, flooding, severe thunderstorms, winter storms, cold waves, heat waves, droughts and wildfires. These events can be extremely dangerous and develop quickly with little warning. Not only can these hazards affect human life and the environment, but they can also impact freight infrastructure such as the rail and highway network, bridges, alternative transportation, stormwater management, inland waterways, airports, pipelines and intermodal facilities. This section lays out the most common weather hazards that affect the Missouri Freight Network at the time of writing. As weather patterns shift and change, future weather hazards may be added or removed from this list. In **Appendix J, Figures 1-7** demonstrate the location of weather events in the state and how those events relate to the location of critical infrastructure.

Tornadoes

- Tornadoes disrupt transportation systems by impacting operations, damaging infrastructure and lowering overall efficiency.
- Missouri is highly tornado prone, with more than 2,500 tornadoes since 1950. Peak months of tornado occurrence are April through June.⁴³
- The 2011 Joplin Tornado, rated an EF5 on the Enhanced Fujita scale, was Missouri's deadliest tornado. It caused catastrophic destruction, requiring an immediate highway clean-up effort, a massive disaster relief freight response and utility reconstruction, impacting freight routes for weeks.

Flooding

- Flooding severely disrupts infrastructure, shutting down highways, railways, bridges and ports, triggering widespread logistical and economic disruptions.
- Repeated widespread flooding events, including the historic 1993 and 1995 Midwest floods and more recent events, resulted in closure of airports, water ports and long distances of highways and rail lines which all require subsequent rebuilding.^{44&45}
- Even minor floods can interrupt operation of multiple freight modes, resulting in supply chain delays.

⁴³U.S. National Weather Service, NOAA, "Months of Peak Tornado Occurrence," accessed October 15, 2025, <https://www.weather.gov/cae/tornadobymonth.html>.

⁴⁴D.J. Hagerty, A.C. Parola and T.E. Fenske, "Impacts of 1993 Upper Mississippi River Basin Floods on Highway Systems," Transportation Research Record 1483 (1995): 32-37, <https://onlinepubs.trb.org/Onlinepubs/trr/1995/1483/1483-004.pdf>.

⁴⁵Joanna Marsh, FreightWaves, "Midwest Floods Stymie Rail Operations," March 21, 2019, <https://www.freightwaves.com/news/railroad-midwest-floods-stymie-rail-operations>.



Severe Thunderstorms

- The high winds, tornadoes, hail, lightning and intense rainfall associated with thunderstorms delay shipments, stranded vehicles and cause costly infrastructure damage.
- Thunderstorms, a frequent and disruptive force statewide, are becoming more common and extreme. In 2024, a severe storm in St. Louis set a record for the most rain in a 24-hour period.

It caused flash flooding that shut down transportation systems and stranded vehicles. At least a dozen St. Louis metro bus routes were out of service for the morning commute, with only limited restoration by 9 a.m. The same storm caused flooding in multiple counties southwest of St. Louis.⁴¹¹ In all, five Missourians were swept to their deaths by the storm's fast-rising floodwaters.⁴¹²

Winter Storms

- Winter weather events can significantly disrupt ground and air transportation systems by impairing visibility, reducing traction, damaging infrastructure and straining maintenance and operational capacity.
- In Missouri, winter weather has

repeatedly halted freight and passenger movement, such as the 2011 snowstorm that prompted the first statewide closure of I-70 and an hours-long closure of the Kansas City International Airport.⁴¹³ **Figure 39** shows the impacts of cold weather on river barge traffic.

Figure 39 – A Mississippi River Towboat and Coal Barge in Icy Waters During a St. Louis Winter



Source: MoDOT

⁴⁶Kate Grumke, Loretta Wimbley and Sarah Fentem, St. Louis Public Radio, "At least two dead after flash flooding throughout St. Louis area on Election Day," published November 5, 2024, <https://www.stlpr.org/news-briefs/2024-11-05/record-breaking-rainfall-flash-flooding-st-louis-election-day>.

⁴⁷Associated Press, "Missouri Flash Floods Blamed for Five Deaths, Including Two Poll Workers," published November 6, 2024, <https://www.weather.com/news/weather/news/2024-11-06-deadly-flash-floods-in-missouri-on-election-day>.

⁴⁸NOAA, "February 1-2, 2011 Blizzard and Record Snowfall Event," accessed October, 15, 2025, <https://www.weather.gov/eax/feb012011>.

Cold Waves

- Cold waves are extended periods of extreme cold, often caused by Arctic air masses, leading to sudden temperature drops and freeze-related damage.

- These events can severely impact infrastructure, causing bridge joint failures, rail fractures and river ice jams.

Heat Waves

- Heat waves in Missouri are becoming more frequent and intense, with periods of extreme heat and high humidity.⁴⁹
- Extreme heat conditions can cause

- heat-related illnesses, droughts, wildfires and significant stress on infrastructure, including power grids and pavement buckling

Drought

- Droughts are prolonged periods of below-average rainfall, often exacerbated by high temperatures. Extreme drought can lead to water shortages and harm to agriculture and ecosystems in the form of reduced crop yields and increased risk of wildfires.
- Extended dry periods can also limit barge transportation on major rivers, threaten

- municipal water supplies and reduce hydropower generation.⁵⁰

- In 2023, Missouri experienced its seventh driest growing season since 1895, with widespread drought conditions caused by low rainfall and high temperatures across an eight-month span.⁵¹

Wildfires

- Although less frequent than in western states, wildfires in Missouri pose a serious threat, especially during dry months with high temperatures and strong winds.
- Most wildfires are the result of human activity and can damage property, harm

- wildlife and endanger public health.

- In March 2024, Missouri experienced its first-ever fire disaster, with more than 200 wildfires burning more than 15,000 acres, including a major outbreak in mid-March that heavily impacted the Ozarks.⁵²

⁴⁹Frankson, Rebekah, Kenneth E. Kunkel, Sarah M. Champion and Brooke C. Stewart., NOAA National Centers for Environmental Information, "Missouri State Climate Summary," 2024, <https://statesummaries.ncics.org/downloads/Missouri-StateClimateSummary2022.pdf>.

⁵⁰NOAA National Integrated Drought Information System, "National Conditions Missouri", accessed October 15, 2025, <https://www.drought.gov/states/missouri>.

⁵¹University of Missouri. College of Agriculture, Food and Natural Resources, Missouri Climate Center, "2023 was likely Earth's warmest year on record, Missouri's third drought during growing season also defined 2023," January 11, 2024, <http://climate.missouri.edu/news/arc/jan2024a.php>.

⁵²Bassler, H. (2025, June 17). "Worst-case scenario": St. Louis meteorologists warn of Missouri's worsening wildfire disasters, KSDK, <https://www.ksdk.com/article/news/local/missouri-wildfire-disasters-are-coming-meteorologists-warn-to-prepare/63-5eb0f06f-be95-4ce6-9cac-3888238f8bec>.



Freight Transportation Network

Weather hazards pose significant risks to Missouri's freight and transportation systems, leading to widespread delays, cancellations, infrastructure damage and increased operational costs. Given Missouri's central location and its vital role as a national freight hub, the impacts to the economy from freight disruptions reach far beyond the State.

The freight transportation network is complex and highly interconnected, supporting the movement of goods across broad distances. It relies on a combination of transportation modes such as railroads, highways, inland waterways, airports, pipelines and intermodal facilities. These modes contribute to the efficiency and reliability of freight logistics while interacting to meet the diverse needs of industries, businesses and consumers. Rather than operating independently, these modes are interconnected in ways that allow freight to move efficiently. This multimodal approach enables flexibility in routing, cost-effectiveness in shipping and reliability in delivery. Intermodal facilities enhance this system by allowing goods to transfer seamlessly between modes, strengthening the overall performance of the network.

Each transportation mode, rail, highways, bridges, inland waterways and ports, airports, pipelines and intermodal facilities, faces distinct risks that can affect the overall functionality and resilience of the freight network. Understanding the specific function and vulnerabilities of each mode is essential for improving system preparedness and response to enable continued flow of freight.

Rail

- Missouri is a central hub for freight rail, hosting more than 3,700 miles of track.
 - Class I railroads, including Burlington Northern Santa Fe Railway (BNSF), Canadian Pacific Kansas City (CPKC), CSX, Norfolk Southern (NS) and Union Pacific Railroad (UP) connect the state to national economic hubs and international ports of entry.
 - Class III railroads, also known as short lines, are important first and last mile connections between industrial areas and the Class I railroads, reducing congestion on Missouri's highways.
 - Critical rail hubs like Kansas City and St. Louis are the second and sixth largest freight rail hubs in the country, playing a vital role in national and international freight movement.
- Rail yards, intermodal facilities and bridges are particularly vulnerable to flooding, heat-related rail deformation and severe storms.

Highway Network and Trucking Corridors

- Missouri is intersected by major highways, including I-70, 44, 49, 55, 29 and 35, which serve as key state and national freight corridors.
- St. Louis, Kansas City and Springfield are major nodes for trucking and logistics.
- Highways serve as critical access to all modal freight hubs.
- Truck parking facilities, highways and bridges need protection from extreme weather events and stormwater flooding.

Inland Waterways and Ports

- The Missouri River (M70 and M29) and Mississippi River (M35 and M55) are major arteries for waterborne freight movement moving between the agricultural Midwest and the Gulf for international shipments.
- The St. Louis regional port accounts for 21% of the Upper and Mid-Mississippi River freight flow.
- Vulnerabilities include fluctuating river levels, sediment buildup in channels and harbors and infrastructure damage from storms both at the ports and to the rivers' navigation control structures.

Airports

- St. Louis Lambert International Airport (STL), Springfield-Branson International Airport (SGF) and Kansas City International Airport (KCI) are critical components for high-value and time-sensitive freight cargo.
- Extreme weather risks that contribute to delays include heat damage to runways, disruptions from severe wind and rainstorms and icing on plane wings.

Pipelines

- Missouri has an extensive network of pipelines transporting oil, natural gas and other products.
- Pipelines are susceptible to erosion, flooding and damage from shifting soil due to extreme weather events.
- Access to pipeline terminals is a critical component of the network.



Intermodal Facilities

- Key intermodal terminals in Kansas City, St. Louis and other locations facilitate the transfer of goods between rail, truck and waterways.
- These facilities face risks from extreme heat, flooding and storm damage

Table 39 outlines the potential impacts of various eather hazards on Missouri’s freight and transportation infrastructure.

Table 39 – Weather Hazard Impacts on Missouri’s Freight System

| | Rail | Highways and Trucking Corridors | Bridges | Inland Waterways and Ports | Airports | Pipelines | Intermodal Facilities |
|----------------------|--|---|--|---|--|--|---|
| Tornado | Tracks blocked by debris; wind damage to rail infrastructure. Possible damage to cargo, railcars and locomotives | Debris blocks roads; structural damage to signage and barriers. Vehicle and cargo damage possible | Structural damage from wind; erosion from flash floods | Debris and outages disrupt cargo flow; fallen trees block access | Aircraft and terminals are vulnerable to wind damage | Debris impact and wind pressure may rupture pipelines | Structural damage to cranes, buildings; system shutdowns. Possible vehicle, container and cargo damage |
| Flooding | Track washouts; foundation erosion | Road erosion and collapse; vehicle sweep risk in deep water | Scouring weakens piers and footings; water pressure damages joints | Eroded banks, damaged docks and disrupted navigation channels. Risk of facility closure | Water intrusion impacts runway surfaces and access roads. Risk of facility closure | Eroded soil exposes or shifts buried pipelines | Rail washouts and road closures break multimodal links |
| Severe Thunderstorms | Track bed erosion; electrical and signal system failure | Washed-out roads; power outages disable signals and crossings. Possible cargo damage | Wind and water stress structural elements | Container loss; unsafe operating conditions for workers | Lightning and wind cause infrastructure damage | Voltage surges and flying debris can damage components | Flooding and outages disrupt operations |

| | Rail | Highways and Trucking Corridors | Bridges | Inland Waterways and Ports | Airports | Pipelines | Intermodal Facilities |
|---------------|--|--|---|---|--|---|---|
| Winter Storms | Cold cracks rails and stiffens components; snow/ice reduce traction | Icy roads reduce driver control; increased maintenance needs | Brittle failures and freeze-thaw cracking | Ice buildup halts barge traffic | Ground handling disruptions due to snow and ice | Cracking and leakage from pipe freezing and contraction | Worker safety protocols trigger shutdowns |
| Cold Waves | Rail fractures; frozen cables disrupt signals | Freeze-thaw cycles degrade pavement, subgrade. Possible cargo damage | Stress from material contraction causes cracking and joint damage | Possible cargo damage from extreme cold | Equipment performance impacted by extreme cold | Freezing can block or rupture pipes | Truck engines or systems may fail to start |
| Heat Waves | Rail deformation and buckling (“sun kinks”); overheated signals | Pavement buckling and rutting of pavement | Thermal expansion stresses bridge joints and decks | Cargo spoilage risk increases; cooling requirements intensify | Runway surface softening | Pipe expansion stresses joints; soil shrinkage shifts support | Thermal stress impacts infrastructure reliability |
| Drought | Rail deformation and buckling. Risk of embankment fires started by sparks | Soil shrinkage can destabilize embankments, cuttings and pavement substructure | Shrinking soils shift bridge foundations | Low water restricts barge drafts and narrows navigation channels | Runway degradation from heat | Soil desiccation shifts pipes, increasing risk of leaks | Soil shrinkage and settlement may stress infrastructure |
| Wildfires | Track damage from heat; reduced visibility from smoke. Possible structure and equipment loss | Road closures from smoke; heat damages pavement; signpost loss risk. Possible structure and equipment loss | Buckled steel and cracked concrete from high heat | Erosion increases from vegetation loss; clogged drainage. Possible structure and equipment loss | Smoke disrupts air traffic visibility and routing. Possible structure and equipment loss | Heat may deform pipes; ash contaminates water systems | Air quality and visibility impair operations. Possible structure and equipment loss |



Freight Impacts on the Environment and Society

Efficient, reliable freight transportation is essential to the nationwide movement of goods and supports jobs, availability of consumer products and quality of life amenities. However, its impact extends far beyond logistics and economics as increasing freight activity can contribute to concerns from communities near the freight facilities. The movement of diesel-powered trucks, trains and cargo equipment contributes to airborne particulate matter, affecting air quality, while the design of freight infrastructure can disrupt drainage patterns and lead to water issues. Over time, these conditions can affect public health and reduce property values. As a result, strategies to reduce these impacts while supporting the continued movement of goods must be considered.

A range of solutions is available to address these challenges to increase the environmental sustainability of the freight systems. The use of zero-emissions equipment at freight facilities can help reduce diesel emissions, improving air quality and public health. In rail corridors, the establishment of quiet zones and the use of wayside horns and rail-highway grade separations can significantly reduce noise pollution without compromising safety. Meanwhile, the growing demand for truck parking has prompted the exploration of potential solutions such as real-time parking information systems, new facility development and the repurposing of existing infrastructure to reduce trucks parking on highway ramps and shoulders, as well as neighborhood streets. These practices aim to address the safety, regulatory and operational challenges truck drivers face when designated parking is unavailable. These solutions improve safety and efficiency and also help protect the quality of life for nearby communities, representing a shift toward more sustainable, efficient and community-conscious freight infrastructure.

Community Impacts

Missouri's freight transportation network, while vital to citizens' well-being and the commercial health of the State, can impact communities and wildlife habitats through its contributions to air and noise pollution, safety concerns and soil and water contamination.

Air

Diesel-powered vehicles and equipment are a source of emissions at the local level, affecting areas that are near highways, river ports, rail yards, transload facilities and distribution centers. When motors idle, they release emissions, increasing local exposure to tiny particles

and droplets such as soot and smoke. Trucks most often idle in traffic and at loading docks. Locomotives idle mostly at loading docks and while awaiting maneuvers in siding tracks and rail yards. Among the effects of vehicle emissions is the formation of ozone, which affects air quality. **Figure 40** shows a sign warning drivers about poor air quality.

Air freight impacts local air quality in communities that are near cargo airports. Aircraft emissions are released during landing, takeoff and idling. Although the volume of air freight emissions is less overall than that of rail or trucks, the emissions per ton of freight are comparable and also impact regional air quality.

Marine freight can affect local air quality, specifically in port communities. At inland waterways emissions originate from ships, diesel-powered equipment, trucks and trains that support cargo movement.

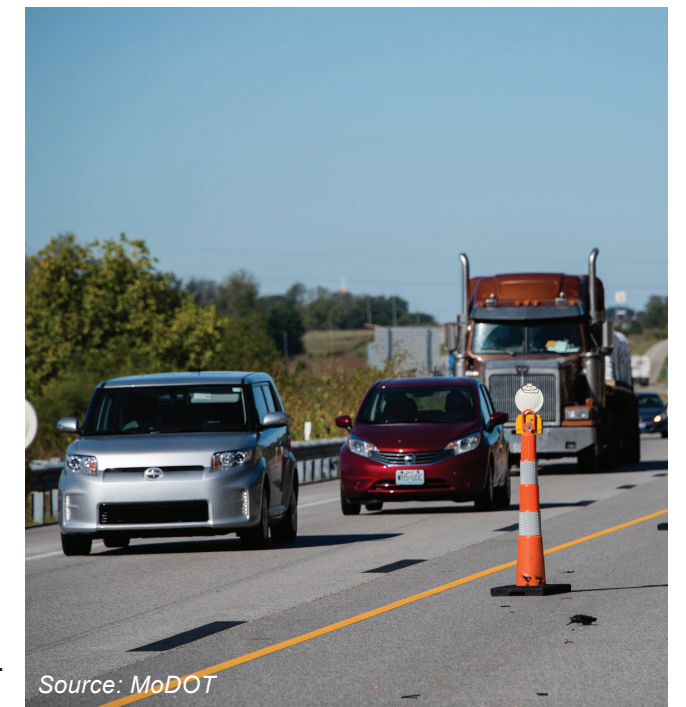


Figure 40 – Ozone Forecast Messaging



Noise and Vibration

The noise from freight traffic can disrupt sleep and affect individuals' stress levels. Vibration caused by the movement of vehicles and locomotives can impact nearby buildings and infrastructure, leading to structural issues.⁵³

⁵³Ardian, Alan Riski Rio, Dewi Handayani and Ahmad Marzuki. 2025, "A Review: Vibration Caused by Transportation," Engineering Proceedings 84, no. 1: 42, <https://doi.org/10.3390/engproc2025084042>.



Traffic Congestion and Safety

Growing demand for goods and services—including doorstep delivery of consumer products—increases the average traffic rate on Missouri’s roads. Increasing numbers of passenger and commercial vehicles can slow the flow of traffic and increase the number of potential conflicts.

Stormwater Runoff and Flooding

Freight facility surfaces such as concrete, asphalt and rooftops are mostly impermeable. These prevent water infiltration and, during significant rain events, can increase surface runoff volume and speed. Stormwater can quickly overflow drainage systems, especially in urban areas. Deluges and the resulting runoff can lead to flash flooding in and around freight hubs, can cause erosion and lessen water quality.

Freight infrastructure can disrupt natural drainage patterns where roads, terminals and buildings were not designed with high water volumes in mind. Soil compaction, caused by the use of heavy equipment and large trucks, can also reduce soil permeability, resulting in flooding. Excess water might flood adjoining or low-lying areas due to the lack of flood protection and resilient infrastructure. Runoff from freight areas can wash contaminants such as deicing chemicals, hydrocarbons from lubricating fluids and heavy metals from tires, brakes and engine wear into watersheds.⁵⁴

Strategies to Enhance Freight Transportation Resilience



Source: MoDOT

⁵⁴U.S. Environmental Protection Agency (EPA), National Pollutant Discharge Elimination System, “Stormwater Discharges From Transportation Sources,” last modified January 10, 2025, <https://www.epa.gov/npdes/stormwater-discharges-transportation-sources>.

Increased resilience can enhance the efficiency and reliability within Missouri’s freight transportation network in the face of major weather disruptions and aging infrastructure.

Table 40 describes targeted goals and strategies that can result in a more adaptable freight system that maintains uninterrupted movement of goods, strengthens reliability of corridors and supports economic competitiveness. By focusing on future planning strategies, MoDOT can mitigate risks and minimize the disruptions on the freight network statewide. Enhancing freight resiliency can protect Missouri’s role as a key national freight hub and support long term economic growth.

Table 40 – Goals and Strategies to Enhance Freight Transportation System Resilience

| SFRP Goal | Strategy |
|---|---|
| <p>Stewardship</p> <p>Maintain current assets and services we have today</p> | <p>Prioritize long-term maintenance for critical freight assets.</p> <p>Incorporate risk planning and resilience needs into transportation planning processes</p> <p>Design freight infrastructure to resist damage under physical stress.</p> <p>Strengthen secondary highways and bridges to operate as detour routes for all traffic, including standard commercial motor vehicles.</p> |
| <p>Safe</p> <p>Work to enhance safety of the transportation system for all users</p> | <p>Identify safe, publicly owned locations for truck parking use when major freight corridors are unexpectedly closed due to weather or other incidents.</p> |
| <p>Prosperous</p> <p>Boost the economy through transportation investments</p> | <p>Coordinate across state and local agencies and modes to unify resilience efforts statewide.</p> |
| <p>Connected</p> <p>Improve mobility and connect communities through expanded multimodal choices</p> | <p>Identify alternative routes for freight assets which are more vulnerable to extreme weather disruptions.</p> <p>Install signage and real-time traffic alert systems to guide freight vehicles through congested areas and provide alternate routes for standard size and weight vehicles when delays occur.</p> |
| <p>Reliable</p> <p>Ensure efficiency and reliability in the transportation network</p> | <p>Prioritize critical freight needs, transportation assets and modal connections for rapid emergency response.</p> <p>Harden vulnerable freight assets to extreme weather and seismic events.</p> <p>Stage alternative commercial vehicle route signage - for trucks of legal dimension and weight – at locations for quick installation during detour events.</p> |
| <p>Innovative</p> <p>Integrate emerging technologies to make our transportation system prepared and future-ready</p> | <p>Integrate technologies to track infrastructure conditions, detect disruptions and support timely freight operation decisions.</p> <p>Implement technology to simulate and monitor infrastructure performance, enabling proactive maintenance and informing design decisions. Include outlier vehicles such as oversized and/or overweight vehicles in assessment and design decisions.</p> |



Table 41 describes goals and strategies in the SFRP that will mitigate freight impacts on the environment and society.

Table 41 – Goals and Strategies to Mitigate Freight Impacts

| SFRP Goal | Strategy |
|---|---|
| <p>Stewardship</p> <p>Maintain current assets and services we have today</p> | <p>Support implementation of Quiet Zones on freight rail lines adjacent to residential areas to reduce noise and improve quality of life while maintaining freight service.</p> |
| <p>Safe</p> <p>Work to enhance safety of the transportation system for all users</p> | <p>Support implementation of zero emission freight equipment.</p> <p>Encourage truck parking facilities to be included in industrial economic development projects to reduce unauthorized parking on shoulders, ramps and near residential areas.</p> |
| <p>Prosperous</p> <p>Boost the economy through transportation investments</p> | <p>Identify potential road-rail grade separation locations on freight routes to reduce idling and noise.</p> <p>Support rail access to industrial development areas to encourage freight traffic efficiency.</p> |
| <p>Reliable</p> <p>Ensure efficiency and reliability in the transportation network</p> | <p>Support installation of automation and idle reduction standards at modal hubs to reduce idling and increase capacity.</p> <p>Consider roundabout installation near freight hubs to reduce truck idling.</p> <p>Expand CCTV locations connected to traffic management systems to increase rapid response for traffic disruptions and backups</p> |
| <p>Connected</p> <p>Improve mobility and connect communities through expanded multimodal choices</p> | <p>Support existing intermodal hub locations and identify potential additional sites to encourage efficient movement of freight and reduce idling from backup queue.</p> |
| <p>Innovative</p> <p>Integrate emerging technologies to make our transportation system prepared and future-ready</p> | <p>Support installation of intelligent highway-rail at-grade crossing technology that adjusts traffic signals and notifies commercial vehicles when an alternative crossing should be used. This reduces idling from backup queues.</p> <p>Continue to monitor other states' experiences with truck parking information systems that provide virtual information to drivers regarding available authorized parking locations.</p> |

Chapter 8. Recommendations

This chapter presents a set of strategic, actionable recommendations that advance Missouri's freight system in alignment with federal freight planning guidance and the goals of the NMFN. These recommendations identify infrastructure improvements, policies and operational innovations that strengthen Missouri's contribution to national economic competitiveness; reduce congestion and eliminate bottlenecks; improve safety, security, efficiency and resiliency; and enhance the productivity and reliability of freight movement for industries that support high-value jobs.

The recommendations reflect analyses of system conditions, freight bottlenecks, modal integration, future demand and performance gaps, as well as opportunities to improve modal shift for both short and long distance movements across rural and urban corridors. They emphasize strategies to achieve and maintain a state of good repair, reduce heavy-vehicle impacts on critical roadways, improve first/last-mile connectivity between ports, airports, gateways and the National Multimodal Freight Network (NMFN) reduce the environmental impacts of freight movement. Stakeholder and regional input helped refine these priorities and support their relevance to Missouri's freight shippers, carriers and communities.





Recommendations are organized into four categories — Policy, Operations, Project Development and Capital Improvements and Communications — the recommendations support multi-state corridor coordination, enhance multimodal connectivity and position Missouri to leverage innovation and advanced technologies to improve safety, efficiency and reliability. They also reflect the need for implementable, high-value strategies that are not burdensome to state or local governments and that align with federal discretionary grant programs in an environment of variable funding availability.



Policy

Recommendation 1: Continue monitoring Truck Parking Information Management System (TPIMS) and Truck Parking Availability System (TPAS) efforts nationwide to evaluate whether these technologies are appropriate and cost-effective for implementation in Missouri.

Discussion: Missouri continues to have a large deficit of truck parking spaces across the system. States across the country are piloting technology-based solutions to more effectively use the available safe and reliable truck parking. Some states have identified issues related to reliability and long-term maintenance of existing technology-based information systems. Missouri trucking industry stakeholders consistently noted a preference for increasing inventory of spaces significantly before implementing an electronic system. Until a significant number of truck parking spaces are added to Missouri’s inventory, monitoring efforts in other states can help The MoDOT identify best practices and continued advancements in artificial intelligence (AI) before committing to a system. MoDOT may explore public-private partnerships or cooperative data-sharing agreements, consistent with its statutory authority and procurement policies, to enhance system efficiency and reduce implementation costs. Existing third-party platforms such as Trucker Path and Dock411 offer crowd-sourced parking data that could inform or supplement future state-led systems. Insights from these efforts, along with findings from the **Truck Parking Analysis Technical Memorandum** should guide any future technology investments.




| Action Items | |
|---|---|
|  | Track TPIMS/TPAS pilot outcomes and funding mechanisms in peer states and freight corridors. |
|  | Engage third-party platform providers to assess integration opportunities and data-sharing protocols. |
|  | Evaluate long-term maintenance, funding and interoperability requirements before pursuing a pilot program or funding. |
|  | Revisit feasibility as part of future MoDOT freight plan and statewide truck parking plan updates. |

| Missouri SFRP Goals | |
|---|--|
|  | Prosperous – Increase partnership coordination with local communities, regional and metropolitan organizations, businesses, transportation service providers and other sectors to identify what transportation projects can better support local economies. |
|  | Reliable – Take a practical/life cycle approach to highway system capacity expansion. |
|  | Innovative – Explore technology and develop business practices that result in lower life-cycle costs. |

Recommendation 2: Increase reliable investment in first- and last-mile non-highway freight infrastructure to reduce highway congestion and improve statewide system efficiency.

Discussion: Modal stakeholders consistently emphasized that lack of capital funds to support non-highway freight movement was limiting the efficiency of Missouri’s freight system. Missouri’s Freight Enhancement Program (FRE) was highlighted as an example of a critical tool for supporting multimodal freight investments that improve reliability and reduce highway congestion. The program’s quick turnaround and ease of application were highlighted as positives with calls for substantial expansion of the available funds. FRE has enabled ports, railroads and airports to complete small but high-impact projects that enhance freight connectivity, safety and economic competitiveness. Stakeholders noted that many freight projects—such as cargo aprons, rail spurs and port access improvements—are not competitive for federal programs, which typically prioritize passenger or highway-centric infrastructure. Increasing flexible, state-level funding for multimodal needs would strengthen the supply chain resilience and statewide freight mobility. This recommendation also aligns with regional priorities outlined in the St. Louis Freightway Freight Development Plan and the Mid-America Regional Council (MARC) Connected Freight Kansas City (KC) 2050 Plan, both of which emphasize increased investment in first- and last-mile connectivity, intermodal access and industrial site readiness. Increasing available funds can help advance regional priority freight projects identified in these plans, supporting coordinated multimodal development across Missouri’s economic centers. Additional details are provided in **Freight Condition and Performance Chapter**.

| Action Items | |
|---|--|
|  | Evaluate opportunities to increase annual FRE appropriations or development of a new larger non-highway grant program for first- and last-mile freight investments through complementary fundings sources (e.g., legislative allocation, public-private cost-share). |
|  | Prioritize projects that improve multimodal connectivity and enhance economic competitiveness. |
|  | Support short line and industrial development tax credit state legislation that encourages investment in Class III rail lines. |
|  | Track FRE project outcomes using consistent performance metrics to demonstrate program effectiveness. |
|  | Flex a portion of the National Highway Freight Program (NHFP) funds to non-highway freight projects as permitted by Title 23 U.S. Code Section 167. |

| Missouri SFRP Goals | |
|---|---|
|  | Stewardship - Explore and secure stable funding to support the current system and services for each mode of transportation. |
|  | Reliable - Provide reliable and accessible multimodal transportation options for all users. |
|  | Innovative - Identify and plan for alternative funding sources to recoup gas tax revenue lost from alternatively fueled vehicles and to supplement gaps in federal funding programs. |



Recommendation 3:
 Modify at-grade railroad crossing prioritization framework to incorporate approach grades and other physical factors that hinder sightlines and increase safety risks.

Discussion: MoDOT uses an exposure index and the FRA accident prediction formula as the primary factors to prioritize crossing projects. Approach grades that hinder sightlines increase safety risks. Modifying the Section 130 program’s methodology would allow Missouri to target investments more effectively, reduce crash risk, mitigate bottlenecks and adopt next-generation technologies that improve safety and mobility at crossings. This action aligns with the Show-Me Zero Plan and the Highway-Rail Grade Crossing State Action Plan (2022-2026), both of which emphasize proactive risk reduction through engineering upgrades, education and public outreach. This recommendation also complements MARC’s data-driven approach to freight corridor safety.



Source: MoDOT

| Action Items | |
|--------------|--|
| ■ | Review the existing Section 130 prioritization criteria to identify gaps related to approach grade and visibility conditions. |
| ■ | Coordinate with the FRA and peer Departments of Transportation (DOTs) to identify best practices for incorporating geometric risk factors into crossing safety programs. |
| ■ | Pilot new data collection or assessment tools (e.g., Light Detection and Ranging (LiDAR), Geographic Information System (GIS) based slope analysis) to quantify sightline limitations. |
| ■ | Update internal procedures and prioritization models to verify that future safety investments address both historical crash data and proactive risk indicators. |

| Missouri SFRP Goals | |
|---------------------|--|
| | Safe - Invest in system-wide safety improvements to reduce fatalities and serious injuries for all modes. |
| | Reliable - Increase reliability of the transportation system in bottleneck areas. |
| | Innovative - Understand and deploy innovative work zone warning and protection devices. |

Recommendation 4:
 Establish a coordinated statewide freight data and governance framework to support continuous collaboration among MoDOT, Metropolitan Planning Organizations (MPOs), Regional Planning Commissions (RPCs), ports, railroads and private-sector partners.

Discussion: Regional freight plans highlight the importance of institutional coordination to sustain effective multimodal planning and data-sharing. Missouri can lead freight planning by providing structure for a statewide practitioner freight team to integrate state, regional and private-sector freight datasets; coordinate project prioritization; and monitor performance outcomes. This would align with MARC’s Connected Freight KC 2050 call for an expanded Goods Movement Committee and strengthen MoDOT’s statewide leadership role in freight planning.

| Action Items | |
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| ■ | Convene a standing freight practitioner’s working group to support regional freight planning. |
| ■ | Develop standardized data protocols for sharing commodity flows, truck GPS and port/ rail volumes. |
| ■ | Integrate data from regional freight plans into MoDOT Tracker and freight dashboards. |

| Missouri SFRP Goals | |
|---------------------|---|
| | Stewardship - Preserve the assets and services currently in place by fostering data transparency, sharing and coordination among all stakeholders. |



Source: MoDOT




Operations

Recommendation 5: Incorporate trucking industry perspectives into work-zone standard protocols for construction and maintenance operations to improve freight safety and reliability.

Discussion: MoDOT has standardized protocols used to plan work zones. The trucking industry emphasized that inconsistent work zones, limited real-time communication and substantially reduced lane width can create safety risks and operational inefficiencies for commercial drivers. Stakeholders cited examples along major freight corridors—particularly the I-70 projects—where temporary concrete barriers were struck or displaced, narrowing travel lanes and creating hazards for trucks. Establishing statewide work zone practices that consistently incorporate trucking industry perspective and improving real-time communication about active construction can help improve safety, reduce uncertainty and maintain freight mobility during construction activities. MARC’s Connected Freight KC 2050 Plan highlights corridor reliability and consistent operations as key freight mobility goals. Implementing standardized work-zone practices will help achieve those objectives and reduce delays for freight carriers across the Kansas City region and statewide.

| Action Items | |
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| <ul style="list-style-type: none"> Engage freight carriers and driver associations in work zone safety standards, protocols and best practices to identify recurring issues and recommended improvements. | |
| <ul style="list-style-type: none"> Expand smart work zones Intelligent Transportation Systems (ITS) technology and its integration into drivers’ GPS notification systems. | |
| <ul style="list-style-type: none"> Evaluate whether planned freight detour routes should be incorporated into work zone standards to increase freight reliability on freight corridors. | |

| Missouri SFRP Goals | |
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|  | <p>Reliable – Maintain a transportation network that is efficient and dependable.</p> |

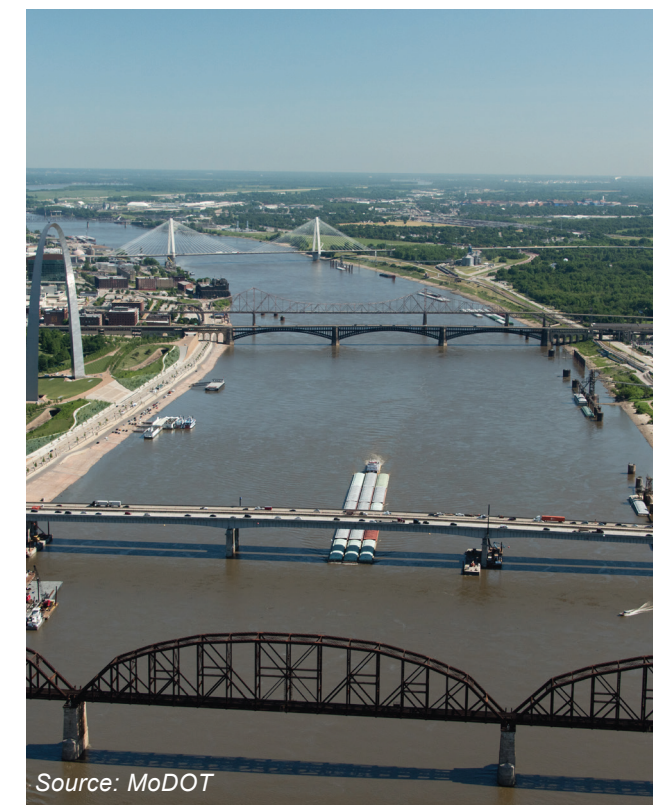


Source: MoDOT



Recommendation 6: Identify and implement strategies for improving freight resiliency through innovative operation enhancements and improving infrastructure on key corridors and freight facilities.

Discussion: To promote infrastructure resilience and operational continuity, MoDOT can incorporate a more proactive, data-driven and technology-enabled strategy. Investing in real-time monitoring systems, adaptive infrastructure and innovative approaches such as the use of AI, can lead to faster response times and reduce the duration and cost of disruptions. Planning for Freight resiliency was also identified as a strategic priority in MARC’s Connected Freight KC 2050 Plan and peer-state freight plans reviewed in **Missouri’s Context Chapter**. These emphasize proactive planning for weather events, infrastructure redundancy and coordinated response capabilities — frameworks Missouri can build upon through this recommendation.

| Action Items | |
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| <ul style="list-style-type: none"> Conduct a freight system resiliency assessment to identify vulnerable corridors, facilities and intermodal connectors. | |
| <ul style="list-style-type: none"> Pilot technology-based solutions (e.g., predictive analytics, remote sensing, automated inspections) to support real-time monitoring and response. | |
| <ul style="list-style-type: none"> Coordinate with ports, railroads and airports to share data and develop joint contingency plans for critical disruptions. | |
| <ul style="list-style-type: none"> Integrate freight resiliency goals and metrics into MoDOT’s long-range planning and performance reporting processes. | |



Source: MoDOT

| Missouri SFRP Goals | |
|---|---|
|  | <p>Reliable - Enhance emergency and alternative routes; Enhance transportation infrastructure resilience to maintain the movement of people and goods during traffic disruptions.</p> |
|  | <p>Innovative - Explore technology and develop business practices that result in lower life-cycle costs. Integrate traffic management systems and vehicle detection systems to monitor and improve traffic congestion.</p> |



Recommendation 7:

Work with regional planning organizations to identify locations needed for truck staging to reduce congestion, unauthorized parking and improve effectiveness of state-provided long-term parking.

Discussion: Freight generators often limit truck pickup and delivery to specified appointment times. In urban areas where authorized parking is limited, drivers often choose to wait at MoDOT-owned truck parking facilities far from the freight generator, reducing the available parking spaces for drivers stopping due to Hours of Service regulations. Then when traveling to the freight generator the truck is operating during peak congestion times on the roadway, decreasing the driver's available time to carry cargo and unnecessarily contributing to peak congestion. If truck staging areas are located at or near the freight generators, the drivers can better plan trips to effectively use available Hours of Service (HOS) and travel to these staging areas outside of peak congestion. This effort complements MARC's corridor analysis and freight data initiatives, which use similar metrics to identify staging areas and parking needs along key urban freight corridors. More detailed information is contained in the **Truck Parking Analysis Technical Memorandum**.



Action Items

- Analyze statewide GPS and American Transportation Research Institute (ATRI) truck movement data to identify high-frequency stopping locations with one- to seven-hour duration trends which can indicate stage parking.
- Coordinate with local public officials, MPOs and RPCs to identify potential locations and strategies to implement stage parking for freight generators.
- Incorporate results into future truck parking plans and multimodal freight planning activities to guide funding and policy priorities.

Missouri SFRP Goals

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| | <p>Prosperous - Increase partnership coordination with local communities, regional and metropolitan organizations, businesses, transportation service providers and other sectors to identify what transportation projects can better support local economies.</p> |
| | <p>Innovative - Explore technology and develop business practices that result in lower life-cycle costs.</p> |

Project Development and Capital Improvements

Recommendation 8:

Expand truck parking spaces along Missouri freight corridors to increase safety and reduce operational costs.

Discussion: Missouri has a substantial shortage in truck parking as described in the **Truck Parking Analysis Technical Memorandum**. MoDOT pioneered conversion of weigh stations and rest areas to truck parking. The gap of supply compared to demand is projected to grow from 875 (2024) to 1,450 (2050) spaces for public parking and from 2,542 (2024) to 5,010 (2050) for private parking. The recent discretionary grant to increase parking availability on I-70 will reduce this gap slightly.



Action Items

- Identify opportunities to expand existing truck parking facilities on all freight corridors.
- Publish the Truck Parking Analysis Technical Memorandum to provide information to private facilities to potentially expand availability.
- Collaborate with MPOs, RPCs and local public agencies to identify areas where staging parking could be implemented to reduce demand at MoDOT's long-term sites.
- Consider the addition of truck parking facilities during project scoping.
- Apply for corridor-wide truck parking discretionary grants using the I-70 application as a model.

Missouri SFRP Goals

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| | <p>Safe - Invest in system-wide safety improvements to reduce fatalities and serious injuries for all modes.</p> |
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Recommendation 9: Consider development of intermodal and transload facilities as eligible projects to strengthen modal shift opportunities, reduce roadway deterioration from heavy vehicle movementstt enhance connections between Missouri’s highway, rail, waterway and air freight networks.

Discussion: Interviews with Missouri freight-dependent industries show that improving modal transfer efficiency remains a major opportunity to strengthen competitiveness and reduce pressure on the highway system. Heavy agricultural, mining, energy and timber truck movements contribute disproportionately to pavement deterioration and the FHWA requires states to identify where these impacts are occurring and where modal alternatives may help reduce long-term maintenance costs.

Expanding intermodal and transload capacity—particularly rail-served or port-based facilities—would provide shippers with viable modal-shift options and relieve corridors experiencing high heavy-truck volumes. These strategies align with the St. Louis Freightway’s Freight Development Plan and MARC’s Connected Freight KC 2050 Plan, both of which emphasize investments that improve multimodal connectivity and reduce reliance on long-haul trucking.



| Action Items | |
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| ■ | Identify and prioritize strategic locations for new or expanded intermodal facilities based on freight flows, commodity types and access to key corridors. |
| ■ | Collaborate with railroads, port authorities, MPOs and private developers to advance site planning, design and funding. |
| ■ | Evaluate opportunities for state support or cost-sharing through programs such as the Freight Enhancement Program or federal discretionary grants. |

| Missouri SFRP Goals | |
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|  | Prosperous - Increase partnership coordination with local communities, regional and metropolitan organizations, businesses, transportation service providers and other sectors to identify what transportation projects can better support local economies. |
|  | Connected - Provide an accessible and connected transportation system for all users. |

Recommendation 10: Partner with Class III railroads for funding to upgrade trackage to accommodate industry standard railcars and increase safety at grade crossings.

Discussion: While the majority of the Missouri Freight rail network is capable of handling industry standard railcars (286,000 lb) gaps remain, predominately on Class III rail lines, where infrastructure limitations prevent full network efficiency. Class III rail lines have limited resources for capital investment. As first- and last- mile connectors, these rail lines provide much needed access to Class I’s which is critical for attraction of freight generators to the state while also providing an alternative to truck thereby reducing congestion and goods movement cost. Some track upgrades have been accomplished through the FRE program, however, that program funding is severely limited. Class III stakeholders noted that recent changes at MoDOT reduced eligibility for maintaining active warning systems at crossings. With limited capital funds for on-going maintenance of these systems, the railroad is less likely to pursue these improvements thus reducing safety for both rail and truck freight at these locations. These proposed partnering initiatives also align with the Freightway’s call for targeted rail-infrastructure upgrades and bridge improvements that remove freight chokepoints in the St. Louis region. See the **Freight Conditions and Performance Chapter** for more details on the impact of weight limit tracks on the network.

| Action Items |
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| ■ Support short line tax credit state legislation that encourages investment in Class III rail lines. |
| ■ Evaluate whether retiring and replacing dated Class III at-grade crossings should be included in eligible activities for rail crossing program. |

| Missouri SFRP Goals | |
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|  | Stewardship - Explore and secure stable funding to support the current system and services for each mode of transportation. |
|  | Reliable - Increase reliability of the transportation system in bottleneck areas. |



Source: MoDOT



Recommendation 11:
 Prioritize targeted improvements in partnership with Amtrak and railroads to maintain and improve on-time performance for the Missouri River Runner and other shared use corridors.

Discussion: Competing interest between freight and passenger rail can pose operational challenges along shared use corridors; targeted investments can help alleviate chokepoints along these critical corridors. This recommendation complements the Freightway Priority Projects List, which includes bridge and rail-corridor enhancements improving both passenger and freight reliability within shared-use corridors. See **Freight Conditions and Performance Chapter** for additional information.



Source: MoDOT

| Action Items | |
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| | <ul style="list-style-type: none"> Work with Amtrak and freight railroads to identify and prioritize shared-use corridor bottlenecks impacting on-time performance. Evaluate infrastructure improvements such as siding extensions, universal crossovers, double-tracking and signal modernization to enhance reliability. Monitor and report on-time performance metrics to evaluate the effectiveness of targeted improvements and inform future planning. |

| Missouri SFRP Goals | |
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| | <p>Prosperous - Increase partnership coordination with local communities, regional and metropolitan organizations, businesses, transportation service providers and other sectors to identify what transportation projects can better support local economies.</p> |
| | <p>Reliable - Increase reliability of the transportation system in bottleneck areas.</p> |

Recommendation 12:
 Support development and marketing of “freight-ready” industrial sites adjacent to multimodal corridors.

Discussion: Missouri Partnership, the Missouri’s Department of Economic Development (DED), SmartPort and Freightway all have programs to identify properties ready for freight generator development with utility connections and modal access. MoDOT can coordinate with local and regional partners to advance site readiness for logistics-focused industries. Site readiness complements MoDOT’s infrastructure role by aligning land development with transportation investments.

| Action Items | |
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| | <ul style="list-style-type: none"> Incorporate site-readiness metrics into FRE Program project selection. Coordinate with DED, Missouri Partnership, SmartPort and Freightway to identify sites being actively marketed to assess any modal access needs anticipated for inclusion in project prioritization. Promote freight-ready sites through MoDOT and regional economic development communications. |

| Missouri SFRP Goals | |
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| | <p>Prosperous - Increase partnership coordination with local communities, regional and metropolitan organizations, businesses, transportation service providers and other sectors to identify what transportation projects can better support local economies</p> |



Source: MoDOT



Communications

Recommendation 13:


Enhance freight truck parking and safety information availability.

Discussion: Truck drivers and other motorists would benefit from improved visibility of truck parking information on MoDOT's web resources, particularly during emergencies. Improving traveler information supports corridor-management goals identified in MARC's Connected Freight KC 2050 Plan, which encourages consistent freight communication tools across regions. Additional details are provided in **Truck Parking Analysis Technical Memorandum.**

Action Items

- Add welcome center, rest area and public truck parking sites to the MoDOT Traveler Information Map.
- Evaluate GPS tracking providers, geofencing, and other ITS tools to enhance real-time notifications to drivers.

Missouri SFRP Goals

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|  | <p>Reliable – Enhance transportation infrastructure resilience to maintain the movement of people and goods during traffic disruptions.</p> |
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Recommendation 14:

Incorporate freight infrastructure resilience into the project prioritization and scoping.

Discussion: Reliability is a key factor for goods movement. Extreme weather events reduce reliability. Impacts of weather hazards on modal components of the freight system can be found in the Freight and Rail Impacts Chapter. This analysis provides general guidance for scoping and project prioritization. Some states have performed a proactive, data-driven vulnerability and impact assessment on individual infrastructure elements to incorporate into project prioritization and scoping. Leveraging resources through interagency coordination can provide a more holistic understanding of system risk, guide investment prioritization and enhance emergency preparedness. This effort parallels MARC's and the Freightway's shared focus on freight system resilience and interagency coordination for emergency preparedness.

Action Items

- Engage with partner MPOs and relevant state agencies.
- Consider freight route weather hazard risk as higher priority in project prioritization process.
- Include major freight routes consideration in development of emergency response tiers.

Missouri SFRP Goals

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|---|--|
|  | <p>Prosperous - Increase partnership coordination with local communities, regional and metropolitan organizations, businesses, transportation service providers and other sectors to identify what transportation projects can better support local economies</p> |
|  | <p>Reliable - Enhance transportation infrastructure resilience to maintain the movement of people and goods during traffic disruptions.</p> |

