



MISSISSIPPI STATEWIDE FREIGHT PLAN

February 2015

FINAL REPORT
EXECUTIVE SUMMARY

MISSISSIPPI STATEWIDE FREIGHT PLAN

Executive Summary

1. Introduction

A comprehensive evaluation of Mississippi's freight transportation system allows for efficient planning and investment in the preservation, improvement, and strategic expansion of the state's freight network. The Mississippi Department of Transportation has prepared this initial Mississippi State Freight Plan (MSFP or Freight Plan) to provide that evaluation by accomplishing the following:

1. develop an understanding of Mississippi's needs for efficient movement of goods and freight
2. identify a core network of critical freight movement corridors and their modal elements
3. assess the performance of Mississippi's primary freight network and the challenges that might be addressed through structured MDOT strategies
4. identify operational, infrastructure, and administrative improvement strategies to ensure continued efficient and safe movement of freight within the key freight corridors and to support Mississippi's overall economic development efforts

This plan has been prepared as part of the ongoing transportation planning process in Mississippi, a process most recently reflected in the Mississippi's statewide multimodal transportation plan, MULTIPLAN 2035. With completion of the Freight Plan, MDOT will have enhanced freight-specific information to incorporate into the next statewide plan.

In addition to addressing the plan objectives above, this Freight Plan has been developed to comply with current federal freight plan requirements. It has been prepared in collaboration with a Freight Advisory Committee established by MDOT to gain input from these groups:

- freight carriers
- freight shippers and receivers
- freight forwarders/terminal facility operators
- private infrastructure owners
- independent transportation authorities
 - seaport and airport authorities
- freight-related organizations for shippers
- academia/research organizations
- governmental bodies: Federal agencies, regional and local governments

1.1 Organization of the Freight Plan

To provide a thorough assessment of Mississippi's freight system, identify strategies and programs for ongoing improvements to the freight system, and comply with federal expectations for state freight plans, the Freight Plan is organized as follows:

- Chapter 2: Key Freight Issues and Opportunities
- Chapter 3: Mississippi Freight Network
- Chapter 4: MFN System Performance Assessment
- Chapter 5: MFN Corridor Needs Assessments and Potential Projects
- Chapter 6: Recommended Freight Network Improvement Strategies and Implementation Plan

1.2 Mississippi Freight System at a Glance

In Mississippi, freight moves through a transportation system that encompasses all modes, key origins and destinations, connecting corridors, and supporting facilities. The multimodal freight system serving Mississippi includes Gulf Coast and river ports, highways, Class I and short line railroads, airports, intermodal facilities, and pipelines. This comprehensive transportation system includes these specific network components and facilities:

- roads and highways – 75,000 centerline miles of roads and highways, with 10,899 state-maintained centerline miles; 16,631 bridges, 5,775 of which are maintained by MDOT
- freight rail – 2,600 mile rail system with five Class 1 railroads (BNSF, KCS, CN/IC, CSX, and NS) and 27 local or regional rail carriers
- ports – 16 public ports along the Mississippi River, the Tennessee-Tombigbee Waterway, and the Gulf of Mexico
- aviation – 8 commercial and 65 general aviation airports
- inter-modal facilities – facilities for the transfer of freight between freight-haul modes
- pipelines – more than 18,000 miles of pipelines that include crude and product oil pipelines, gas pipelines, and oil pumping stations

Combined, Mississippi has a very strong network of east-west and north-south Interstate highways, and with five strong Class 1 railroads serving the state, the freight system offers good opportunity for competition and access to internal, interstate, and international markets. In 2011, 421 million tons of commodity freight valued at 531 billion dollars used the transportation facilities in Mississippi. Trucking is the dominant mode used for commodity freight with a share of 64 percent of the total freight movement, followed by rail at 28 percent and water at 8 percent. By 2040, a projected 624 million tons of freight valued at over 1 trillion dollars will be shipped over facilities in Mississippi. This is a 48 percent increase in total freight tonnage and an 89 percent increase in the value of shipments from 2011 to 2040.

2. Key Freight Issues and Opportunities

The context for recommended freight system improvements in Mississippi includes freight goals, objectives, and system performance expectations; a description of the freight institutional environment, including

regulatory structure and public operating practices; a summary of statewide freight flow and implications of that data; and summaries of freight system strengths and weaknesses.

2.1 State Freight Goals, Objectives, and Performance Measures

The foundation of Mississippi’s Statewide Freight Plan is a set of freight goals and objectives that reflect the state’s overall transportation goals defined in MULTIPLAN 2035, as well as national freight goals defined in the National Freight Policy. MULTIPLAN 2035 set forth statewide goals relating to transportation system accessibility and mobility, safety, maintenance and preservation, finance, and support of the State’s economic development and environmental stewardship. These guide MDOT’s transportation program delivery efforts.

MSFP goals and associated objectives are freight-specific, relevant to Mississippi, and reflect the national freight policy goals, Mississippi’s overall transportation goals, and a set of overarching guiding principles. The Mississippi freight goals and objectives are shown in **Table ES.1**.

Table ES.1 - Mississippi Freight Goals and Objectives		
MULTIPLAN 2035 Goals	MSFP Freight Goals	Freight Objectives
Economic Development: Provide a transportation system that encourages and supports Mississippi’s economic development	Improve economic benefits of the statewide freight network.	Increase public investment to facilitate freight system improvements that generate jobs and enhance MS’s competitive position.
Accessibility and Mobility: Improve accessibility and mobility for Mississippi’s people, commerce and industry	Improve reliability and reduce congestion on the priority freight corridors.	Provide reliable and predictable travel times along identified freight corridors by reducing time delays.
Safety: Ensure high standards of safety in the transportation system	Protect the safety and security of freight infrastructure.	Reduce the number and rate of freight-movements related fatalities and injuries.
Maintenance and Preservation: Maintain and preserve Mississippi’s transportation system.	Maintain the MS freight network infrastructure in a state of good repair.	Continuously improve infrastructure conditions that affect freight bottlenecks and reliability issues.
Environmental Stewardship: Ensure that transportation system development is sensitive to Human and Natural Environmental Concerns	Protect and enhance the environment while enhancing the freight network performance.	Implement freight-specific environmental stewardship programs to reduce impact of freight movement on the state’s communities.

2.2 Mississippi Freight Institutional Environment: Existing Policy, Programs, and Strategies

As in most states, multiple private and public entities are responsible in Mississippi for planning, preservation, operations, maintenance and improvements of the freight network infrastructure. To facilitate

freight movement, the private-sector freight industry purchases, owns, and maintains necessary vehicles, rail rolling stock, aircraft, warehouses/distribution centers, and maritime/waterborne vessels. The private sector generally finances its freight infrastructure in Mississippi, although the public sector also provides financing for freight facilities through MDOT, Mississippi Development Authority, and local and regional governments. Public agencies are also responsible for ensuring that industry complies with relevant rules and regulations.

The current federal transportation reauthorization bill, MAP-21, recognizes the importance of a strong freight network to ensure competitiveness in the global economy and includes a variety of freight-related provisions. USDOT's mode-specific agencies enforce highway, rail, and aviation safety and security regulations. Environmental regulations relevant to freight movement affect construction of freight projects and operation of freight infrastructure and systems. Economic regulation affecting freight movement occurs at the national level through interstate and international trade and agencies such as the Surface Transportation Board (STB). At the state level, MDOT is responsible for ensuring that federal and state legislative requirements, policies, and guidelines for transportation are reflected in MDOT's operations and long-range plans.

2.3 Commodity Flow Trends and Implications

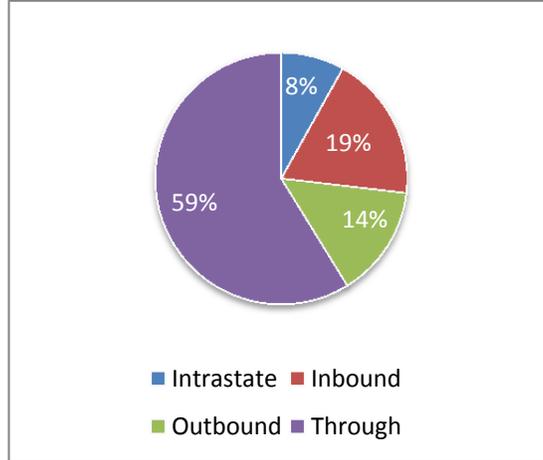
With the foundation of the strategic goals, objectives, and performance measures in place, it is critical to understand the current system and how goods move across and within Mississippi prior to identifying system deficiencies or developing freight network recommendations. Freight movement in Mississippi occurs across a variety of transportation modes and among major freight generators and/or attractors by tonnage and value. The flow of goods across Mississippi involves modal networks including truck, rail, water, and air. Utilizing TRANSEARCH 2011 database, the existing and future statewide freight flows summarized below capture the following origins and destinations:

- inbound cargo coming into Mississippi from outside the state
- outbound cargo from inside the state going out-of-state
- external cargo movements, passing entirely through the State in transit between origin and destination
- intrastate cargo movements, where both origin and destination are located within the state

Current and Future Freight Flows

In 2011, 421 million tons of the commodity freight by volume used the transportation facilities in Mississippi, valued at 531 billion dollars. These facilities include highways, railroads, waterways, airports, and related ports and intermodal facilities. The tonnage of commodities shipped within the state only accounts for 8 percent of the total while 59 percent are through shipments. The tonnage of inbound and outbound shipments accounts for 19 percent and 14 percent of the value of total shipments, respectively. **Figure ES.1** shows the distribution of the commodity by direction of travel.

Figure ES.1 - 2011 Commodity Flow Share by Direction

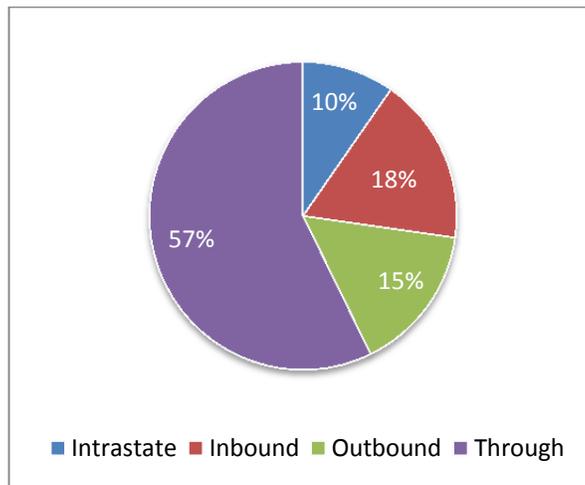


Source: IHS Global Insights TRANSEARCH, 2011.

By 2040, a projected 624 million tons of freight will be shipped through the facilities in Mississippi, valued at a total of 1 trillion dollars. This amounts to a projected 48 percent increase in total freight tonnage and an 89 percent increase in the value of shipments from 2011 to 2040. The commodities shipped within the state only account for 10 percent of the total, a slight increase in share from 2011, with 57 percent through shipments, a slight decrease from 2011 levels. The share of inbound freight also decreases from 19 percent in 2011 to 18 percent, while that for outbound freight increases from 14 percent to 15 percent. This indicates that a moderately faster pace of growth in commodity productions within Mississippi is expected by 2040.

Figure ES.2 shows the distribution of Mississippi projected 2040 freight flows.

Figure ES.2 - 2040 Commodity Flow Share by Direction



Source: IHS Global Insights TRANSEARCH, 2011.

2.4 Freight System Strengths and Challenges

The trends in freight growth and mode share could have significant implications on how the state's freight system operates and on the investment needed to provide the freight movement efficiency that is critical to the state's economic health. In particular, the highway system, already in some distress in terms of pavement

and structures condition and congestion, will be pressured by continuing increases in volumes of heavy truck traffic.

System Structure and Condition

Overall, Mississippi's freight system functions adequately today to meet the demand for freight services across the state. The multimodal networks provide good coverage of the state, with no indication of gaps in modal systems that would preclude ongoing or anticipated economic development activities; however, it is recognized that on case-by-case bases, individual development projects may require "last-mile" types of investments to make particular sites conducive to industrial locations or expansions. In general:

- Mississippi's Interstate highway network serves the state well. East-west corridors exist in the south (I-10), middle (I-20), and north (the evolving I-22 corridor along the existing US 78 corridor between Memphis and northern Alabama). North-south corridors serve the state from the Gulf Coast and ports of Mississippi and Louisiana through to Tennessee (and states further north) and Alabama, tying into I-20.
- Underlying the Interstate network, Mississippi has a broad network of US and Mississippi state route highways that support the interstate system and the mobility needs of the state.
- The state's rail system remains viable. With five Class 1 carriers, it provides strong competition and service to all parts of the country.
- Mississippi benefits from multiple maritime and river ports, with Mississippi River ports providing access to the entire Mississippi River valley and the Tennessee-Tombigbee Waterway allowing bulk freight exchange with Tennessee and Alabama.
- Largely owing to the size of the state's economy, there are limited opportunities for movement of large amounts of freight by air, but with the major freight hub in Memphis and international airports in Jackson and Biloxi - Gulfport, there is reasonable access for movement of high-value freight by air.

In short, Mississippi appears to possess a freight transportation system, with its combination of publicly and privately owned infrastructure and a diverse structure of private and corporate freight movement providers, that offers competitive opportunity for the state's business community and consumers to ship and receive the freight needed for continued economic development.

Freight System Challenges

While the state's freight system in general is able to meet business and consumer needs, each mode does face challenges in responding to increasing demand for service and to risks from inadequate investment to maintain or expand the infrastructure.

Highway Capacity and Bottlenecks

At present, the areas where the highway traffic volumes exceed capacity are concentrated mainly within urbanized areas in the state, including Jackson, south Memphis area, the Gulf Region, Hattiesburg, and Tupelo. The busiest highway corridors include US 78 between Memphis and Tupelo, US 278 west of Tupelo, I-20 between Jackson and Meridian and I-10 along the Gulf Coast. By 2040, further congestion on primary corridors is forecasted if significant capacity investment is not made. In addition to the roadways experiencing congestion today as listed above, other highways such as US 72 between Memphis and Corinth,

US 61 between Memphis and the junction with US 49, US 49 between Jackson and Hattiesburg, as well as I-59 between the Gulf Coast and Laurel, will be approaching capacity by 2040. The full length of I-20 will likely be congested and I-10 will experience significant congestion and delay.

A second element of congestion has to do with whether there are localized bottlenecks that are restricting the flow of freight. Recent FHWA/ATRI analysis indicates that only two locations in Mississippi have been identified: in Jackson, at the interchange of I-20 and I-55, and in Meridian, at the interchange of I-20 and I-59. Data for these locations show neither to pose a serious congestion threat at present, but they should be examined more closely as specific corridor improvement strategies are being considered.

Pavement Condition

MDOT reported in its recent annual report that 25 percent of pavement on the primary highway network is in “Poor,” “Very Poor,” or “Failed” condition; by 2035, 75 percent of MDOT’s 2-lane highway system is projected to be in “Poor,” “Very Poor,” or “Failed” condition. For the trucking industry and its shippers, the primary implication of deteriorating pavement condition is the resulting increase in operating cost, primarily due to increased need for vehicle maintenance and damage to finished goods during shipping.

Bridge Conditions

Bridge maintenance is a second “preservation” area that will continue to strain both MDOT and local government highway departments. MDOT has estimated that 17 percent of state-maintained bridges and 28 percent of locally-maintained bridges are in need of repair or replacement, and that current cost for bridge replacement is \$4.2 billion. Most of the deficient bridges are located on less-traveled roadways, but their presence causes real concern to the state’s motor carriers, whether they are common carriers or private fleets.

Railroads

The state’s railroad companies, responsible for operating and maintaining the rail network, are likely to continue to face their historical challenge in raising capital funding needed to provide efficient operations. Nationally, evidence is growing that as the economy recovers and rail freight increases, railroads are experiencing challenges in processing freight through major hubs. One bottleneck that was identified in the Mississippi Goods Movement and Trade Study (MGM&TS) was yard capacity at the KCS yard in Jackson.

Ports and Waterways

For Mississippi’s ports and waterways, three primary challenges need to be addressed:

- Accommodating changing international shipping patterns following completion of the Panama Canal widening
- Preserving adequate channel depth in the face of changing water levels; this poses a significant challenge for Mississippi River ports.
- Improving the “last mile” access to port facilities for trucks and railroads will be a relatively isolated but a significant challenge.

As part of the MULTIPLAN 2035 statewide transportation plan, \$1.15 billion in port or port access improvements were identified.

Airports

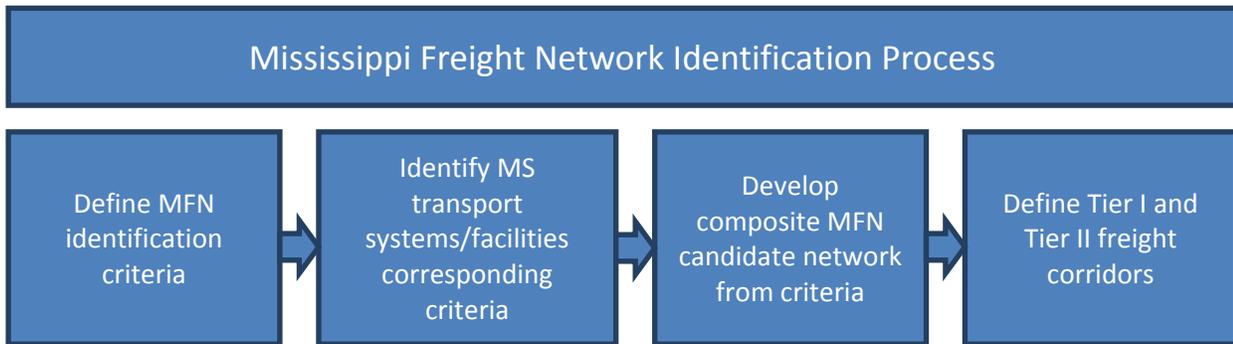
MULTIPLAN 2035 has identified in excess of \$1 billion in airport capital improvements over the next 25 years. The greatest challenge seems to be the ability of the state’s aviation network to provide efficient movement of high value commodities that may be critical to efforts to expand high-tech manufacturing.

3. Mississippi Freight Network

A key element in development of the Mississippi Statewide Freight Plan is identification of key freight corridors in the state to allow MDOT to set investment priorities that support the state’s economic development goals. The Mississippi Freight Network is intended to define these critical corridors and is comprised of primary multimodal freight corridors, major intermodal facilities (marine ports, river ports, and commercial airports) served by those corridors, and connecting roadway and rail links serving intermodal facilities, associated intermodal distribution and warehousing facilities, and the state’s major freight generators.

3.1 Freight Network Identification Process

To identify this principal Mississippi Freight Network, the study team built on the analyses of state freight flow, infrastructure condition, and institutional challenges and opportunities, defined a set of MFN corridor identification criteria, and applied those criteria to identify a set of Tier I and Tier II multimodal freight corridors and their primary facilities. The process to identify MFN corridors and stratify them into statewide (Tier I) and regional (Tier II) categories depicting their importance for national, statewide, and regional freight flow is shown graphically in the figure below.



3.2 Mississippi Freight Network Identification

The Mississippi Freight Network consisting of 15 corridors of varying length is proposed, responding to freight movement issues and opportunities. Corridors are classified as being either Tier I or Tier II. The resulting recommended MFN network is illustrated in **Figure ES.3** and summarized in **Table ES.2**. Each MFN corridor is characterized by these elements:

- It is aligned along a primary trunk highway which defines the spine of the corridor (e.g., I-55).
- Each Tier I corridor also features a Class 1 railroad main line that generally runs closely parallel to the primary highway.
- Each Tier II corridor features a primary highway, but not all corridors have parallel rail lines.

- Each corridor features a combination of intermodal facilities (ports, airports, or rail) served by either highway/roadway or rail line, or both, and at least one principal connector to that facility.

Descriptions and assessments of each of the MFN Tier I and Tier II corridors can be found in **Appendix C** of the final report. The assessments include the following information:

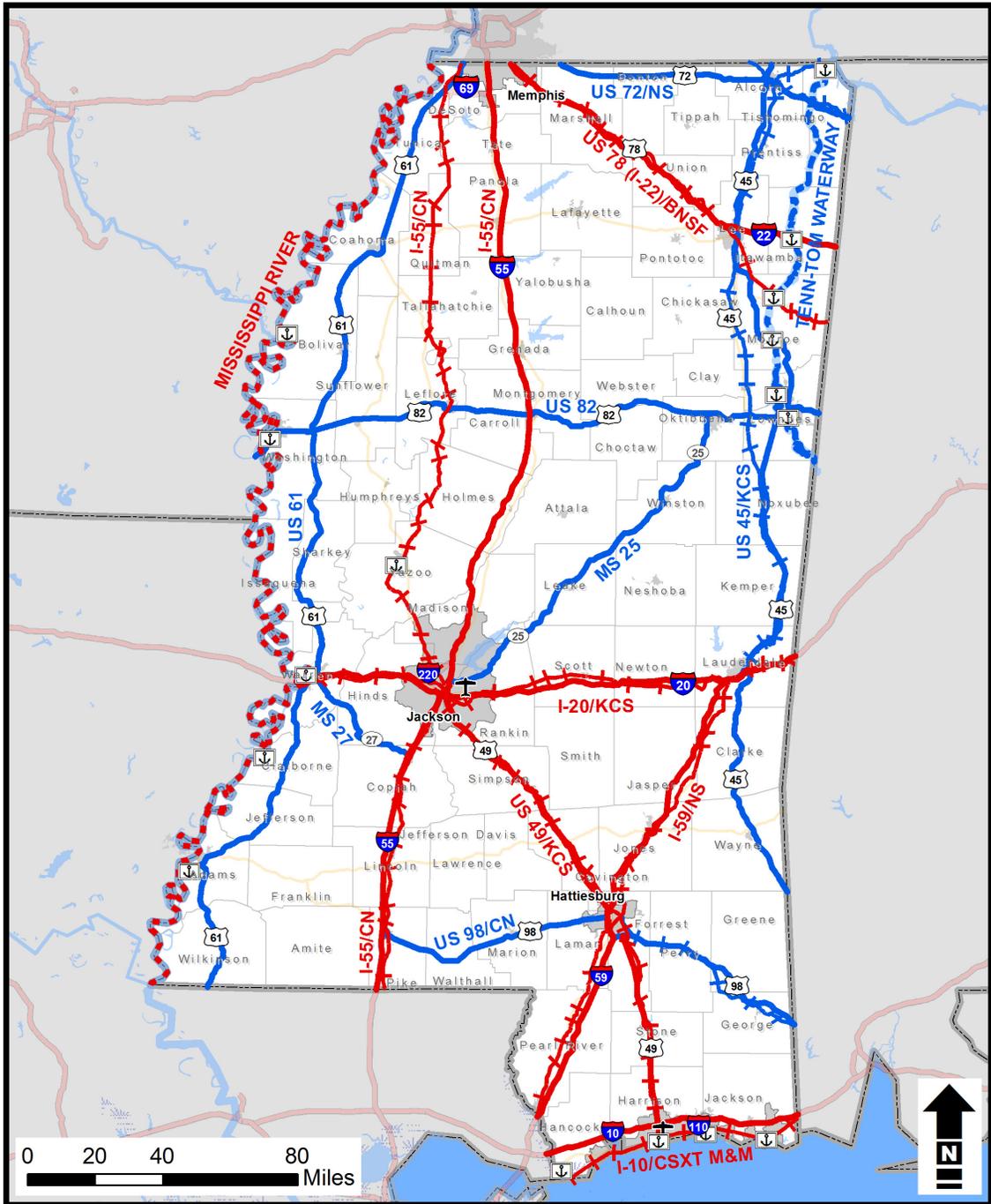
- primary facility infrastructure elements
- corridor freight flow characteristics
- corridor infrastructure performance
- corridor needs assessment, and
- corridor infrastructure needs

4. Mississippi Primary Freight Network System Performance Assessment

4.1 Mississippi Primary Freight Network System Performance Measures

A primary objective of the Mississippi Freight Plan is to identify a set of freight system improvements by which the freight plan goals, and by extension, goals of Mississippi's statewide transportation plan, MULTIPLAN 2035, can be achieved. A second goal is to develop an implementation strategy for addressing freight system needs. To identify and prioritize improvements to Mississippi's freight network, primary freight network performance measures were identified, and each MFN corridor and their primary highway and rail facilities were assessed against those measures. Shown in **Table ES.3** is a set of performance measures that form the basis for an assessment of the MFN and its individual facilities.

Each of the performance measures established in the previous section was applied on a systems level to the MFN, to allow comparative evaluation of the relative performance and deficiencies of the corridors and also to identify specific corridor deficiencies and potential projects to address those deficiencies. In this section, the systems-level assessment is presented for each performance measure, with conclusions offered regarding relative corridor performance and overall areas of concern.



MISSISSIPPI STATEWIDE
FREIGHT PLAN



LEGEND	
	Tier I Highway
	Tier I Railway
	Tier I Water
	Tier II Highway
	Tier II Railway
	Tier II Water
	Other Interstates
	US I Highway
	Airport
	Port

MISSISSIPPI
FREIGHT NETWORK
CORRIDORS

FIGURE ES.3

Source: ESRI, MDOT.

Table ES.2 - Mississippi Freight Network Corridors

Corridor	Limits	Primary Facilities/Operators
Tier I Corridors		
I-10/CSXT (Gulf Coast)	LA State Line in Hancock County to AL State Line in Jackson County	I-10, CSXT M&M Subdivision mainline, Port of Gulfport, Port of Pascagoula, Port of Bienville, Gulfport-Biloxi International Airport
I-20/KCS (Vicksburg-Jackson-Meridian)	LA State Line in Warren County to AL State Line in Lauderdale County	I-20, KCS mainline (Meridian Speedway), Port of Vicksburg, Jackson International Airport
I-55/CN (Southaven-Jackson-McComb)	LA State Line in Pike County to TN State Line in DeSoto County	I-55, CNRR mainline, Port of Yazoo, Jackson International Airport
I-59/NS (Picayune-Hattiesburg-Meridian)	LA State Line in Pearl River County to AL State Line in Lauderdale County	I-59, NS Crescent Corridor mainline
US 49/CN/KCS (Jackson-Hattiesburg-Gulfport)	Gulfport in Harrison County to Jackson area in Rankin County	US 49, CN Beaumont Subdivision between Jackson and Hattiesburg, KCS Gulfport Subdivision between Hattiesburg and Gulfport, Port of Gulfport, Gulfport-Biloxi International Airport, and Jackson International Airport.
US 78 (I-22)/BNSF (Olive Branch-Tupelo-Fulton)	TN State Line in DeSoto County to AL State Line in Itawamba/Monroe County	US 78 (I-22), BNSF mainline, Port of Amory, Port of Itawamba
Mississippi River (Port of Rosedale-Port of Natchez)	LA State Line in Wilkinson County to TN State Line in DeSoto County	Mississippi River, Port of Greenville, Port of Natchez, Port of Rosedale, Port of Vicksburg, Port of Yazoo, and Port of Claiborne County, and US 61.
Tier II Corridors		
MS 25 (Jackson-Louisville-Starkville)	Jackson in Hinds County to Starkville in Oktibbeha County	MS 25
MS 27 (Vicksburg-Utica-Crystal Springs)	Vicksburg in Warren County to Crystal Springs in Copiah County	MS 27
US 45/KCS (Corinth-Meridian-Waynesboro)	AL State Line in Wayne County to TN State Line in Alcorn County	US 45, KCS/Artesia subdivision mainline, Port of Aberdeen, Clay County Port, Lowndes County Port, Port of Amory
US 61 (Southaven-Clarksdale-Vicksburg-Natchez)	LA State Line in Wilkinson County to TN State Line in DeSoto County	US 61, Port of Natchez, Port of Rosedale, Port of Vicksburg, Port of Greenville, and Port of Claiborne County
US 72/NS (Mt. Pleasant-Corinth-Iuka)	TN State Line in Marshall County to AL State Line in Tishomingo County	US 72, NS Crescent Corridor mainline, Yellow Creek Port
US 82 (Greenville-Winona-Columbus)	AR State Line in Washington County to AL State Line in Lowndes County	US 82, Lowndes County Port, Port of Greenville
US 98/CN (McComb-Hattiesburg-Lucedale)	McComb in Pike County to AL State Line in George County	US 98, CN mainline
Tennessee-Tombigbee Waterway (Yellow Creek Port-Lowndes County Port)	AL State Line in Noxubee County to TN State Line in Tishomingo County	Tennessee-Tombigbee Waterway, Port of Aberdeen, Port of Itawamba, Lowndes County Port, Port of Amory, Yellow Creek Port, and Clay County Port, and US 45.

Table ES.3 - Mississippi Primary Freight Network Corridor Performance Measures

Table ES.3 - Mississippi Primary Freight Network Corridor Performance Measures			
Performance Measure		Tier I Corridor Facilities	Tier II Corridor Facilities
Highways			
Highway Level of Service	2011	Urban: LOS D or better Rural: LOS C or better	Urban: LOS D or better Rural: LOS C or better
	2040	Urban: LOS D or better Rural: LOS C or better	Urban: LOS D or better Rural: LOS C or better
Safety Ratings		Primary route annual crash rate < 139/100M vmt (i.e., 80% * statewide average of 174)	Primary route annual crash rate < 174 /100M vmt
Pavement Condition		IRI rating: 75% of primary route miles < 95	IRI rating 65% of primary route miles < 95
Structures Condition		All main line bridges >16' vertical clearance	All main line bridges >15' vertical clearance
		# weight-restricted bridges = 0%	# weight-restricted bridges < 10%
Railroads			
Weight capacity		100% of track able to carry > 286k lb. carloads	100% of track able to carry > 286k lb. carloads
Speed/Track Condition		All core track meets or exceeds FRA Class 4 standards (>40 mph for freight, >60 mph for passenger)	80% of core track meets or exceeds FRA Class 3 standards (>25 mph for freight, >30 mph for passenger)
Safety		All public road crossings of functional classification Collector or greater equipped with active crossing warning (gates and flashers)	All public road crossings of functional classification Collector or greater equipped with active crossing warning (gates and flashers)

4.2 Primary Freight Network Performance Summary

Based on the MFN network assessment described above, the following are conclusions regarding freight system-level performance and issues that may affect Mississippi freight flow, supply chains, and ongoing state economic development activities. These conditions and related issues will influence the strategies pursued by MDOT in the packaging of potential projects, as discussed in the next chapter, into groups of consistent investment strategies.

- Mississippi has a good network of east-west and north-south Interstate highways, and by strong competition provided by five Class 1 railroads, providing Mississippi businesses with good opportunity for competitive freight transport to national and international markets.
- On the whole, the Mississippi Freight Network does not exhibit broad stretches of congested roadway that adversely impact the overall reliability and cost of truck operations.
- Important state freight highways are experiencing high overall crash rates, with adverse impact on truck movement. While most Tier I corridors are well below crash rate targets, US 49

significantly exceeds those targets and would benefit from programmatic safety improvements. Tier II corridor highways perform more poorly, largely due to roadway geometry including extensive two-lane sections.

- No system-level issues have been identified that would adversely affect business supply chains.
- Truck-borne freight flow could benefit by an increase of Interstate highway bridge clearance. MDOT would want to conduct extensive coordination with neighboring states and more focused discussion with the trucking industry before moving forward with such an initiative.
- Trucking and rail carriers would benefit from enhanced rail grade crossing protection, particularly on unprotected crossings of higher volume highways with higher speed, higher volume rail lines.
- There is no evidence that Mississippi highways are receiving unusual wear and tear as a result of trucking activity due to resource extraction. The forestry and poultry industries have expressed concern about posted bridges that are focused on the secondary road network.

5. Mississippi Freight Network Corridor Needs Assessments and Potential Projects

The systems-level Mississippi Freight Network assessment described in the preceding chapter provides broad conclusions on the freight network performance and targets for improvement, but it is not sufficient to begin identification of specific projects within the individual corridors. In this section, results of the assessment of each Tier I and Tier II corridor based on their degree of satisfying Mississippi freight system performance measures are summarized, and potential projects are identified. The corridor assessments result in identification of current or anticipated deficiencies along the primary highway or rail facilities and of potential projects to address those deficiencies. Some of the nominated projects are already identified in various MDOT or MPO systems plans (e.g., MULTIPLAN 2035, state rail plan, or various MPO long range transportation plans) or in MDOT's project programs (e.g., MDOT's Statewide Transportation Improvement Program).

For purposes of this part of the freight network assessment, freight projects are defined as physical or operational improvements that potentially offer significant benefits to Mississippi, its business community, and the Mississippi Freight Network such as the following: improved accessibility and mobility of freight flows; relief of congestion and bottlenecks on the freight system; improved the safety, security, or resilience of the freight system; improved or preserved the freight system infrastructure; implemented technology or innovation to improve the freight system; or reduced environmental impacts of the freight flows.

Detail for each corridor that has led to identification of potential projects is provided in the Corridor Inventory and Assessments in **Appendix C. Table ES.4**, provides a summary of the significant deficiencies considered to affect freight flow in each Tier I and Tier II freight corridor and a set of potential infrastructure or operational improvement projects to address those deficiencies. As can be seen, the improvements range from major, corridor-long improvements to spot improvements intended to

address localized problems. Several of these localized projects respond to specific bottlenecks identified by freight stakeholders and confirmed by the analysis.

6. Recommended Freight Network Improvement Strategies and Implementation Plan

MSFP recommendations and the implementation plan are set within a framework of policies, program enhancements, and focused projects. They are also developed under an umbrella of national freight goals, with an implied intent of furthering achievement of those national goals. Recommended freight system improvements are structured to position MDOT to be eligible for the supplemental project funding provided under MAP-21 for infrastructure improvement projects that are specifically tied to improved freight system operation.

The focus of the recommended projects and implementation plan is on the Mississippi Freight Network. Together, they define an overall roadmap for MDOT for improving Mississippi's freight system.

6.1 Freight Improvement Recommendations Framework

In preparing its freight plan, MDOT has attempted to define a framework for plan recommendations. That framework is built on an identified core network of critical freight infrastructure and services, is driven by intent to achieve freight goals that reflect broader state and national goals, and is achieved by multiple aspects of policy and program enhancements and freight infrastructure improvement projects.

As defined in this freight plan, the framework for a broad improvement program for Mississippi's freight system begins with identification of, and focuses on, the Mississippi Freight Network. Identifying the MFN was the critical first step in developing freight policies, programs and projects and is used as the basis for identifying and prioritizing plan recommendations. The MFN, defined in Chapter 4, is comprised of the most essential facilities for the movement of freight through the state:

- Mississippi's Interstate highways and other critical highway corridors
- a core rail network, benefiting from operation of five Class 1 railroads
- both marine and river ports along the Gulf Coast, Mississippi River, and Tennessee-Tombigbee Waterway, and
- major commercial airports offering international service in Jackson, Gulfport, and Memphis

Next, efforts to optimize the MFN seek to be consistent with the Freight Plan goals, which are intended to reflect and be consistent with broader state transportation goals and federal freight goals.

Finally, the framework yields recommendations that provide a mix of strategies in three key categories: policy, programs, and projects.

Together, these elements form the framework and foundation for the Freight Plan recommendations and provide a roadmap for implementation.

Table ES.4 - Potential Mississippi Freight Network Corridor Projects

Corridor	Primary Corridor Deficiencies	Primary Potential Projects Existing Plan/Program Status
Tier I Corridors		
I-10/CSXT	Growing I-10 congestion and delay along the entire corridor by 2040 will slow freight reliability; 1 of 9 bridges (11%) below target clearance; worsening pavement deterioration of I-110 connector; need for CSXT grade crossing improvements to meet crossing warning standards.	Widen I-10 along entire corridor (most segments included in MDOT STIP/ Preliminary Prioritization List); Raise one I-10 bridge to provide 16' clearance. I-110 pavement reconstruction.
I-20/KCS	Growing congestion by 2040 - 41% of corridor will be congested, focused in Jackson and Meridian; I-55/I-20 and I-59/I-20 interchanges identified as top highway bottlenecks nationwide by ATRI; 11 of 80 bridges (14%) below target clearance; need for KCS grade crossing improvements to meet crossing warning standards.	Widen I-20 in Jackson and Meridian areas (MDOT Preliminary Prioritization List); Raise I-20 bridges (11) to meet 16' clearance performance standard; Leverage Jackson Metro Incident Management II/Hurricane Response Project to include expanded commercial vehicle elements.
I-55/CN	I-55 currently provides acceptable LOS outside of some congested segments in the Jackson area, notably at the I-20 interchange; growing congestion by 2040 – 23% of corridor will be congested, including I-55 south and north of Jackson; I-55/I-20 interchange identified as one of top highway bottlenecks nationwide by ATRI; 26 of 113 bridges (23%) below target clearance; 31% pavement in unacceptable condition - worst Tier I IRI rating; bridge clearance less than target; need for CN grade crossing improvements; track speed standards not met by CN north of Jackson and in Greenwood; inadequate rail access to Port of Yazoo.	Widen and repave I-55 in Jackson and Hernando (MDOT STIP/ Preliminary Prioritization List & MULTIPLAN 2035); Raise I-55 bridges (26) to meet 16' clearance performance standard; Install additional ITS phases of the Jackson Metro Incident Management II/Hurricane Response Project; Leverage DeSoto County Incident Management Project to include expanded commercial vehicle elements; CN track improvements in Greenwood and north of Jackson to raise line speed.
I-59/NS	Growing congestion by 2040 - 22% of corridor will be congested (Hattiesburg, Laurel, and Picayune areas); I-59/I-20 interchange identified as top highway bottlenecks (nationwide assessment by ATRI); 7 of 48 bridges (15%) below target clearance; need for NS grade crossing improvements; track speed standards not met by NS in Laurel and Picayune.	Raise I-59 bridges (7) to meet 16' clearance performance standard; Leverage deployment of the Hattiesburg region ITS Incident Management System & TMC Operations to include expanded commercial vehicle elements; NS track improvements in Laurel and Picayune to raise line speed.

Table ES.4 - Potential Mississippi Freight Network Corridor Projects

Corridor	Primary Corridor Deficiencies	Primary Potential Projects Existing Plan/Program Status
US 49/ CN/KCS	Congestion in Richland, Hattiesburg, and Gulfport (cited by FAC); growing congestion by 2040 - 30% of corridor will be congested; US 49 crash rate higher than safety target; 10 of 13 bridges (77%) below target clearance; the only Tier I corridor with weight-restricted bridges; need for KCS grade crossing improvements; sections of CN and standards; lack of direct rail access into Port of Gulfport facility.	Widen and repave US 49: I-10 to US 90; I-20 to Star; School Rd to O'Neal Rd in Gulfport (MDOT STIP/ Preliminary Prioritization List). Safety improvements along US 49. Raise US 49 bridges (10) to meet 16' clearance performance standard; Reconstruct two US 49 bridges to lift weight restrictions; Leverage deployment of Hattiesburg region ITS Incident Management System & TMC Operations to include expanded commercial vehicle elements; CN and KCS track improvements to raise line speed; Develop rail access directly into Port of Gulfport (MS State Rail Plan).
US 78 (I-22) /BNSF	Growing congestion by 2040 - 31% of corridor will be congested (suburban Memphis and Tupelo); 1 of 51 bridges (2%) below target clearance; 31% pavement in unacceptable condition; one bridge less than target clearance; need for BNSF grade crossing improvements; track speed standards not met by BNSF in Tupelo; inadequate highway and rail access to Port of Itawamba and Port of Amory.	US 78 repaving: Exit 1 to Exit 37; Exit 76 to Exit 94; US 278 - US 45 to Amory: widen to four lanes to Port of Amory (MULTIPLAN 2035); Raise one US 78 bridge to meet 16' clearance performance standard; BNSF track improvements in Tupelo to raise line speed; BNSF access improvements to Port of Amory: extend rail spur to US 278 bridge and upgrade 12 rail bridges between Amory and Columbus to permit 286K loads (MULTIPLAN 2035 and MS State Rail Plan).
Tier II Corridors		
MS 25	Localized congestion in Jackson; inadequate capacity and inadequate pavement condition in Jackson; MS 25 crash rate higher than safety target.	Repaving and widening of MS 25 from Grants Ferry Rd to MS 471 (MDOT STIP/ Preliminary Prioritization List); Safety improvements along MS 25.
MS 27	MS 27 crash rate higher than safety target; one of two Tier II corridors with weight-restricted bridges; 43% pavement in unacceptable condition – worst Tier II IRI rating.	Safety improvements along MS 27 - highest Tier II corridor crash rate; Reconstruct two MS 27 bridges to lift weight restrictions; MS 27 pavement management program.
US 45/KCS	Sections of KCS do not support 286k weight limits; need for KCS grade crossing improvements; no rail access to Port of Aberdeen.	Upgrade KCS mainline from Corinth to West Point to handle 286k loading; KCS track improvements from Corinth to Tupelo to raise line speed; Port of Aberdeen: construct a three mile-long connection track (MULTIPLAN 2035 and MS State Rail Plan).

Table ES.4 - Potential Mississippi Freight Network Corridor Projects

Corridor	Primary Corridor Deficiencies	Primary Potential Projects Existing Plan/Program Status
US 61	US 61 crash rate higher than safety target; inadequate roadway access to Port of Vicksburg.	Safety improvements along US 61; US 61 to Haining Rd - new roadway connecting to Port of Vicksburg (MULTIPLAN 2035; FAC); US 61 Business/Haining Rd bridge access to Port of Vicksburg - bridge replacement with 4-lane bridge (MULTIPLAN 2035).
US 72/NS	US 72 crash rate higher than safety target; rail access to Yellow Creek Port in need of rehabilitation.	Safety improvements along US 72; Rehabilitate Yellow Creek Railroad connecting Yellow Creek State Inland Port to KCS (MS State Rail Plan & MULTIPLAN 2035).
US 82	US 82 crash rate higher than safety target; 38% pavement in unacceptable condition; lack of rail access to Port of Rosedale.	US 82 pavement management program; Safety improvements along US 82; Reinstate rail access to the Port of Rosedale.
US 98/CN	Congestion in the Hattiesburg area; US 98 crash rate higher than safety target; one of two Tier II corridors with weight-restricted bridges; 28% pavement in unacceptable condition; need for CN grade crossing improvements; sections of CN in Hattiesburg and McLain areas fail track speed standards.	Safety improvements along US 98; Reconstruct two US 98 bridges to lift weight restrictions; Leverage deployment of Hattiesburg region Incident Management System & TMC Operations to include expanded commercial vehicle elements; CN track improvements in Hattiesburg and McLain to raise line speed.

Source: MDOT Statewide Transportation Improvement Program, 2015-19; Atkins analysis.

Note: Text **in bold** indicates potential projects already programmed through MDOT Statewide Transportation Improvement Program, or identified in MULTIPLAN 2035 or MDOT’s Preliminary Prioritization List.

6.2 Freight Network Improvement Strategy and Project Recommendations

To complete the identification and assessment of the Mississippi Freight Network, the evaluation of each of the elements of the MFN in terms of performance measured against a defined set of standards, and identification of freight system improvements to address deficiencies, a set of recommended freight improvement strategies and associated projects is proposed for discussion.

To select from among the optional strategies, and considering the broader freight system conditions and issues, rationale priorities need to be established. Again reflecting the broader transportation goals set in MULTIPLAN 2035, the following are considerations in setting strategic priorities:

1. Safety Improvements
2. Investment (Infrastructure) Preservation
3. Operational Efficiency Enhancement
4. Reliability Enhancement

Based on these considerations, **Table ES.5** offers a set of prioritized improvement strategies and a set of high priority projects to implement those strategies.

Table ES.5 - Recommended Short-Range Mississippi Freight Network Improvements	
Freight Improvement Strategy Priorities	High Priority Projects
1. Safety and security improvements	Safety improvements along Tier I corridor: US 49 Safety improvements along Tier II corridors: MS 27, MS 25, US 61, US 82, US 72, and US 98. Upgrade all Tier I rail grade crossings (Collector road or higher) to full active crossing warning devices.
2. Infrastructure preservation	Reconstruct two US 98 bridges to lift weight restrictions. I-110 pavement reconstruction. MS 27 pavement management program. US 82 pavement management program.
3. Operational efficiency enhancement	Leverage Jackson Metro Incident Management II/Hurricane Response Project to include expanded commercial vehicle elements on I-20 and I-55. Develop rail access directly into Port of Gulfport (I-10/CSXT Corridor; MS State Rail Plan).
4. Reliability enhancement	Widen I-10 along entire corridor Widen I-20 in Jackson and Meridian areas Widen and repave I-55 in Jackson and Hernando Widen and repave US 49: I-10 to US 90; I-20 to Star; School Rd to O'Neal Rd in Gulfport CN track improvements in Greenwood and north of Jackson to raise line speed (I-55/CN Corridor) NS track improvements in Laurel and Picayune to raise line speed (I-59/NS Corridor)

Note: High priority projects shown in **bold font** are either already programmed through MDOT's Statewide Transportation Improvement Program, or identified in MULTIPLAN 2035 or MDOT's Preliminary Prioritization List.

6.3 Implementation Plan

The last element in the development of the MSFP is a plan for implementation of the priorities and the strategies shown above. The implementation plan presents short-term and long-term strategies, including projects, policies, potential funding, and targeted timing for addressing the freight issues identified in the freight plan and for upgrading the MFN to meet the State’s freight goals. The implementation element of the MSFP reflects the following elements:

❖ Support of National Freight Policy Goals

As noted in Chapter 2, MAP-21 (Section 1118) calls on state freight plans to include a description of how those plans will improve the ability of the states to meet national freight goals established under 23 U.S.C. 167. For Mississippi, the evident similarities between the national and Mississippi freight goals should ensure that freight system improvement strategies that result from the Mississippi Statewide Freight Plan will improve the state’s ability to meet national freight goals. **Table ES.6** provides MDOT’s expectations for its response to and support of the national freight policy goals.

Table ES.6 - Mississippi Freight Plan Support of National Freight Policy Goals	
National Freight Policy Goal	Mississippi Statewide Freight Plan Response
Enhancing economic efficiency, productivity, and competitiveness	<i>MSFP has identified a core network of vital multimodal freight corridors (Mississippi Freight Network) that are consistent with national freight networks and has established strategies for improving freight flow along those corridors and to vital intermodal facilities to enhance efficiency, productivity, and competitiveness.</i>
Reducing congestion on the freight transportation system	<i>MSFP assessment has identified congested corridors and bottlenecks and has infrastructure improvements and operational enhancements to address that congestion.</i>
Improving freight system safety, security, and resilience	<i>MSFP has established as MDOT’s highest freight related policy the safety and security of the state’s freight systems. Strategies are identified to address high-crash corridors and to expand existing technology programs (ITS) to include freight-safety elements.</i>
Improving freight system state of good repair	<i>In setting strategy for freight system performance, MSFP has examined infrastructure physical conditions, and has established as a high priority the preservation of existing systems in programming freight system investment.</i>
Using advanced technology, performance management, innovation, competition, and accountability in operating and maintaining the freight network	<i>MSFP calls for MDOT to enhance its transportation system performance monitoring to provide key measures of freight system performance. MDOT intends to incorporate in a more focused manner provisions in its technology programs (e.g., interstate congestion management) elements that will specifically address freight movement issues.</i>
Reducing adverse environmental and community impacts of the freight system	<i>In defining the MFN, assessing freight flow characteristics of the freight corridors, identifying needed MFN and intermodal connector improvements, MDOT will be improving freight corridor safety and intermodal connector efficiency, strategies that should reduce threat of crashes and resulting spills and reduce impact of freight flow through Mississippi communities.</i>

❖ **Coordination with Other Transportation Plans**

Completion of this initial Mississippi Statewide Freight Plan will allow MDOT to bring focused information and strategies to other statewide transportation and policy planning efforts. Implementation of MSFP strategy and policy recommendations will also allow MDOT to bring consistent freight policies and programs to regional planning efforts. By identifying as the Mississippi Freight Network those core transportation infrastructure elements whose preservation and enhancement are critical to efficient freight flow and support of industrial logistics activities, MDOT will be able to convey to its planning partners the importance of preservation and investment of the MFN. The following are the primary statewide or regional transportation planning activities that MDOT will continue to advance by applying the findings and recommendations of the freight plan:

- MULTIPLAN 2040
- MDOT Modal plans
- Regional transportation plans

❖ **Commitment to Continuing Coordination with Key Industries**

Preparation of this state freight plan was greatly aided by input received from the Freight Advisory Committee, bringing information and opinions from a broad range of Mississippi's business and government sectors: manufacturers, agriculture and forest product producers, freight providers, state regulatory agencies, and regional planning agencies. As MDOT continues to focus its efforts to improve freight flows within the state in support of broad economic development goals, the agency is committed to continuing efforts to coordinate with these key freight stakeholders, by extending the Freight Advisory Committee that guided development of this freight plan. MDOT has established the FAC mission/role/objectives to be:

- consider ways to enhance freight mobility
- help determine how MS freight system is used and could improve
- provide insight into future goods movement – patterns and needs
- assist in identifying critical freight needs and projects on the MS Freight Network
- enhance freight network safety and security

MDOT anticipates that the FAC will meet one to two times per year.

❖ **Freight Policy and Program Recommendations**

A key element in ensuring an efficient freight system supportive of Mississippi's economic development goals is identification of strong policy recommendations. Good public policy supports effective decision-making and guides enhanced freight program development. Following are recommendations for policy enhancements by MDOT, in a coordinated effort with its freight stakeholders.

➤ **MFN Designation and Freight Highway Investment Prioritization**

With identification of the key freight-haul corridors in the state as elements of the Mississippi Freight Network, MDOT has defined the Tier I and Tier II corridors that should be of highest priority for preservation and improvement. MDOT considers that such identification is valuable in allowing focused monitoring of freight system performance in the state, and in guiding the programming of projects to achieve freight system improvement. It is recommended that MDOT adopt the MFN as a strategic underpinning for publicly funded transportation system investment decisions. While it is recognized that Mississippi does not have a dedicated source of funds for freight improvement programs or projects, it is further recommended that preference through project programming be given to projects that address the primary highway system needs identified in this freight plan.

➤ **Intermodal Connector Improvements**

Examination of Mississippi's freight network, including receipt of input from the Freight Advisory Committee and other freight stakeholders, has revealed that beyond conditions on the primary facilities of the MFN corridors, there is a challenge in meeting the "last mile" deficiencies for connectors to important intermodal facilities such as ports, rail-highway interchange sites, or major warehousing/distribution centers. As an element of the MSFP, it is recommended that MDOT consider re-establishing the Intermodal Connector Improvement Program as a way to provide focused priority on critical "last mile" connections to key intermodal facilities. If consideration is given to program renewal, it is further recommended that eligibility criteria that were defined when the program was created are revised to reflect the freight movement objectives established by this MSFP.

➤ **Application of Freight-Based Technology Solutions**

With ever-improving technology for monitoring operations of transportation systems and for responding to incidents that adversely affect efficient and consistent system performance, there is opportunity to apply technology-based solutions to maximize the capacity of existing physical infrastructure. This can allow costly infrastructure expansion to be deferred or even avoided. To seek such efficiency enhancements, it is recommended that MDOT:

- identify public-private freight technology applications to optimize freight movement in critical, congested corridors.
- expand development of real-time information monitoring and communications systems to increase freight movement efficiency and reliability.
- explore application of dynamic travel information to improve routing decisions and maximize capacity on the existing networks.
- integrate freight management solutions into existing traffic management centers.

➤ **Freight Funding**

While Mississippi's freight systems are operating at reasonable levels and do not have demonstrated major deficiencies, and shippers have a variety of port options for transshipment of water-borne freight, the freight system is not without its issues. The primary concerns are highway infrastructure conditions, including pavement condition, structural (age) and functional (vertical and lateral clearance) condition of bridges; condition of "last-mile" access to intermodal facilities, where lack of capacity or direct connections has created a few shipper-identified bottlenecks; and capacity at rail classification yards due to significant increases in rail cargo as the national economy continues to recover.

While additional funding for freight system improvements would likely produce significant benefits to the general public and to freight shippers and carriers, in light of the funding that is currently available, it is not recommended that MDOT consider additional dedicated funding programs. In light of the overall highway system needs, it is recommended that consideration be given to prioritizing highway projects that are consistent with the MFN assessments contained in this plan.

➤ **Freight System Performance Monitoring**

One of the mandates of MAP-21 is direction to the USDOT to monitor the performance of the transportation systems financed by federal funding allocations. As established in this freight plan, it is the intent of MDOT to refine its current transportation performance monitoring system to incorporate performance measures established in this plan.

❖ **Implementation Plan Timelines**

Timing for the Implementation Plan includes both short-term and long-term implementation actions. Generally, short-term actions focus on policy and performance monitoring initiatives, while long-term initiatives focus on stepwise improvements to freight systems, to address major capital improvement needs.

It is recommended that MDOT consider short-term actions, within the next three to five years, including:

- enhancement of MDOT performance monitoring systems to incorporate freight performance measures
- initiation of all policy recommendations
- advancing project implementation on highest priority improvements by application for supplemental federal funding for identified freight projects.

Long-term implementation actions, for the five-to-fifteen year period, could include

- implementation of MFN corridor enhancement projects, with focus on
- optimize use of any available federal funds that are for express purpose of national freight network improvement

