MDOT
MISSISSIPPI DEPARTMENT OF TRANSPORTATION

MISSISSIPPI STATEWIDE FREIGHT PLAN

February 2015

Amended October 2017

FINAL REPORT

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1 Introduction

Efficient movement of freight and goods along Mississippi's freight network is critical to the state's economy and the well-being of citizens for national and international competitiveness. Mississippi freight providers and users, including shippers, receivers, carriers, and other freight stakeholders, rely on a safe, efficient, reliable, and cost-effective freight transportation system. The efficient and effective functioning of highways, railways, ports, airports, and pipelines allows them to move the products needed to carry on the state's business activities and everyday life and is an important consideration in business attraction and retention decisions.

Within that context, and to provide a cohesive strategy for supporting efficient freight movement, the Mississippi Department of Transportation (MDOT) has prepared this initial Mississippi State Freight Plan (MSFP or Freight Plan) to develop a coherent strategy for addressing the freight transportation needs of Mississippi's economy and its industries.

1.1 Purpose of the Freight Plan

A comprehensive evaluation of the state's freight transportation system allows for efficient planning and investment in the preservation, improvement, and strategic expansion of the state's freight system. The primary objectives of the MSFP are to:

1. develop an understanding of the needs of Mississippi's economy for efficient movement of goods and freight
2. identify a core network of critical freight movement corridors and their respective modal elements
3. assess the performance of Mississippi's freight network and the challenges that might be addressed through structured MDOT strategies
4. identify improvement strategies to ensure continued efficient and safe movement of freight within the key freight corridors

This plan builds on the ongoing transportation planning process in Mississippi, as 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.

1.2 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 – provides a summary of key Mississippi freight issues and opportunities, as compiled in earlier technical memoranda. This includes description of 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 the implications of that data; and summary of freight system strengths and weaknesses.

Chapter 3: Mississippi Freight Network – identifies a network of key freight corridors in the state. The Mississippi Freight Network (MFN) represents 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 those intermodal facilities, associated intermodal distribution and warehousing facilities, and the state's major freight generators. Identification of the MFN will allow MDOT to set investment priorities that support the state's economic development goals.

Chapter 4: MFN System Performance Assessment – presents an assessment of the performance of the MFN in meeting the state's freight goals. Assessment data generated for each corridor is used to develop a systems-level evaluation of the freight network.

Chapter 5: MFN Corridor Needs Assessments and Potential Projects – provides a corridor-by-corridor performance assessment, using those same freight performance measures. Based on the resulting needs assessment, a set of freight improvement projects to address identified deficiencies is created and compared against existing MDOT long-range plans and work programs. Projects include infrastructure modernization, infrastructure expansion, and operational improvements. The project identification examines adopted transportation plans and improvement programs of MDOT, to establish the freight benefits of already planned or programmed projects.

Chapter 6: Recommended Freight Network Improvement Strategies and Implementation Plan – presents a recommended set of freight improvement strategies, combinations of public and private sector initiatives, capital and operational expenditures, and MDOT program enhancements, and identifies a freight improvement implementation plan of policy and program enhancements, and projects, plus performance measures.

1.3 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, as shown in **Table 1.1**. Freight infrastructure elements can be shared with other system users; for instance, passenger motor vehicles can travel alongside trucks on the highway network, or passenger planes using airports also used by commercial aircraft. Conversely, freight often moves along corridors reserved (almost) exclusively for that purpose, including the state's railroads, pipelines, and rivers.

Table 1.1 - Freight Network Components	
Freight Movement Infrastructure	• Roadways • Rail lines • Airports • Waterways • Pipelines: oil, gas
Freight Equipment	• Trucks • Trains • Aircraft • Vessels (maritime, waterborne)
Freight Terminals/Facilities	• Truck terminals • Rail yards • Air cargo facilities • Maritime terminals • Intermodal yards and terminals
Supporting Facilities	• Truck rest stops • Equipment storage • Maintenance facilities • Terminals • Interchange yards • Staging areas • Weight stations • Parking areas
Warehousing/Distribution Centers	• Storage • Value-added activities (e.g., assembly, packaging services, customization, postponement, pre-retail activities) • Cross docking (unloading and loading with minimal warehousing)

While the freight system is composed of a series of individual modes, each tends to rely on the others to ensure the movement of freight from an origin to destination. 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, also shown in **Figure 1.1**:

- roads and highways – 75,000 centerline miles of roads and highways statewide, with 10,899 state-maintained centerline miles; 16,631 bridges statewide, 5,775 of which are maintained by MDOT[1]
- 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 modes, with intermodal truck and rail; rail and truck, and truck, port, and rail facilities

[1] 2013 MDOT Public Roads Statistics Extent, Travel, and Designation

- 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 good 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 access to internal, interstate, and international markets. Based on the analyzed IHS Global Insights TRANSEARCH 2011 data, 421 million tons of commodity freight valued at 531 billion dollars used the transportation facilities in Mississippi in 2011. The tonnage of inbound and outbound shipments accounts for 19 percent and 14 percent of the value of total shipments, respectively. 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. The top carried commodities in the state are bituminous coal, secondary traffic related to warehouse distribution centers, and chemical and petroleum products. In 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.

1.4 Socio-Economic Context

The national economy in the U.S. has been in transition for the last few decades, migrating from a manufacturing-based economy to a service-based economy. Understanding population and employment growth and its impact on economic activities can shed light on the importance of freight to the overall economy and its contributions to Mississippi's economy. To this end, a high-level description of the State's economy is provided, with focus on current and anticipated socio-economic trends that drive freight movement activity in Mississippi, and the key economic drivers: Mississippi's industries, producing and consuming materials and goods, and the State's population, employed by Mississippi's industries and consumers of the finished products.

1.4.1 Population

Population growth is an indicator of workforce availability, a needed element for economic development and growth. Home to nearly three million residents in 2012, Mississippi is the 31st most populous state in the nation. From 1970 to 2012, Mississippi has added nearly 770,000 residents, an increase of 34.6 percent. The Gulf Coast/Southeast region (Mississippi and its neighboring States of Alabama, Arkansas, Louisiana, and Tennessee) grew at a faster pace than that of Mississippi alone, at 43.9 percent within the same timeframe. Mississippi's population growth has increased at a rate below the region, with Tennessee and Arkansas in the lead. **Table 1.2** shows the historic population growth for Mississippi, four neighboring States, and the five-state area combined.

U.S. Census projections indicate that Mississippi's population will grow by 3.6 percent to 3.1 million between 2012 and 2030, an annual percent growth of 0.1 percent, less than the growth rate of 0.8 percent rate over the last 30 years. The population projections, shown in **Table 1.3**, suggest the region is expected to grow at a rate double that of Mississippi within that time period, with Tennessee growing nearly four times as rapidly as Mississippi. In the foreseeable future Mississippi is expected to surpass only Alabama in regional population growth.

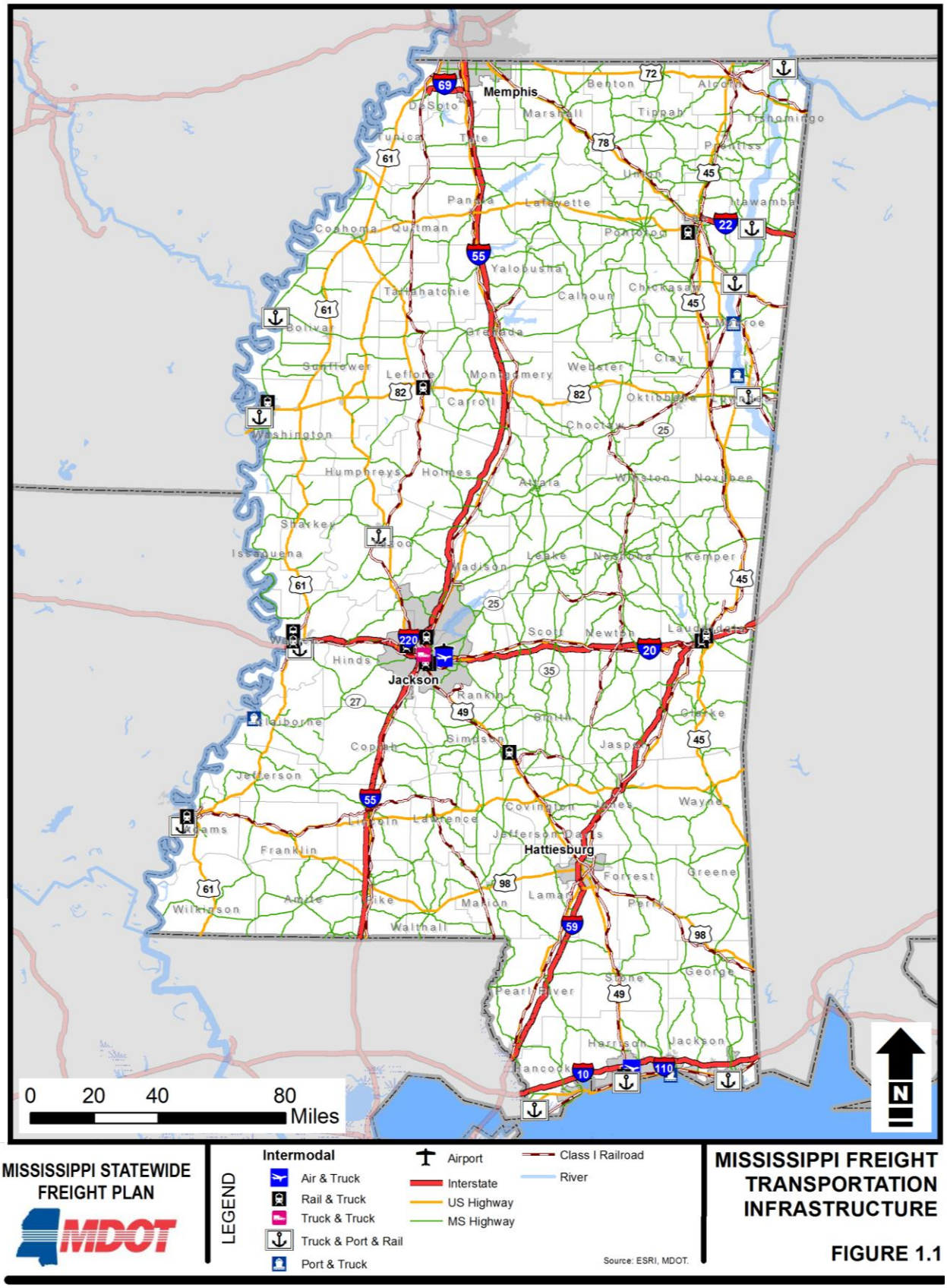

Memphis
Jackson
Hattiesburg
0 20 40 80
Miles
N
MISSISSIPPI STATEWIDE FREIGHT PLAN
MDOT
LEGEND
Intermodal
Air & Truck
Rail & Truck
Truck & Truck
Truck & Port & Rail
Port & Truck
Airport
Interstate
US Highway
MS Highway
Class I Railroad
River
Source: ESRI, MDOT.
MISSISSIPPI FREIGHT TRANSPORTATION INFRASTRUCTURE
FIGURE 1.1

Table 1.2 - Population and Population Growth Rates							
State	Year					1970-2012	
	1970	1980	1990	2000	2012	% Change	Annual % Growth
Mississippi	**2,216,994**	**2,520,770**	**2,573,217**	**2,844,658**	**2,984,926**	**34.6%**	**0.8%**
Alabama	3,444,354	3,894,025	4,040,587	4,447,100	4,822,023	40.0%	1.0%
Arkansas	1,923,322	2,286,357	2,350,725	2,673,400	2,949,131	53.3%	1.3%
Louisiana	3,644,637	4,206,116	4,219,973	4,468,976	4,601,893	26.3%	0.6%
Tennessee	3,926,018	4,591,023	4,877,185	5,689,283	6,456,243	64.4%	1.5%
Area Total	15,155,325	17,498,291	18,061,687	20,123,417	21,814,216	43.9%	1.0%

Source: U.S. Census Bureau

Table 1.3 - Projected State Population and Population Growth Rates						
State	Year				2012-30	
	2012	2020	2025	2030	% Change	Annual % Growth
Mississippi	**2,984,926**	**3,044,812**	**3,069,420**	**3,092,410**	**3.6%**	**0.1%**
Alabama	4,822,023	4,728,915	4,800,092	4,874,243	1.1%	0.0%
Arkansas	2,949,131	3,060,219	3,151,005	3,240,208	9.9%	0.2%
Louisiana	4,601,893	4,719,160	4,762,398	4,802,633	4.4%	0.1%
Tennessee	6,456,243	6,780,670	7,073,125	7,380,634	14.3%	0.3%
Area Total	21,814,216	22,333,776	22,856,040	23,390,128	7.2%	0.2%

Source: U.S. Census Bureau

1.4.2 Employment

The Mississippi economy employed 1.1 million people in 2012. Eighty-two percent of the 1.1 million wage and salary workers currently employed in Mississippi are in service-providing industries (including trade, transportation, and utilities), while the remaining 18 percent are employed in the goods-producing industries (manufacturing, construction and natural resources/mining).[2] Despite the dominance of services, goods-producing industries, and manufacturing in particular, are still crucial to the state's economy. In the U.S. as a whole, manufacturing provides 9 percent of total jobs, but in Mississippi the figure is nearly 13 percent. This is despite a negative change in manufacturing employment in the State in the last decade, an overall decrease of 27 percent from 2002 to 2012, and the loss of 533 manufacturing establishments.[3]

[2] U.S. Department of Labor, Bureau of Labor Statistics, 2012
[3] Mississippi Department of Employment Security

1.4.3 Economic Structure

Mississippi's economy is diversified, with employment spread across a variety of industry sectors. Based on the U.S. Department of Labor, Bureau of Labor Statistics data from 2012, the leading economic sectors in Mississippi are government, trade/transportation/utilities, manufacturing, education and health, and leisure. As shown in **Figure 1.4**, the freight-intensive sectors in Mississippi, the three major goods-producing sectors of manufacturing, construction, and mining and logging, employ nearly 195,000 workers to produce a wide spectrum of domestic and international products. Within manufacturing, employing 137,000 workers, transportation equipment (including both shipbuilding and automobile production), machinery manufacturing, electrical equipment, and fabricated metal products account for 37 percent of the total employment.[4] The service-oriented industries, with a combined total of nearly 910,000 employees, also rely on the physical movement, especially the retail trade outlets that depend on freight transportation to stock and restock their warehouses and shelves. Compared to the surrounding four states, Mississippi's economy is similar to the others in terms of the freight-intensive sectors as the percentage of the total employment; Mississippi's share of the freight-intensive sectors employment as percentage of the total employment is 37.2 percent, compared to the average of 37.3 percent in the five-state region (as shown in **Table 1.4**).

Table 1.4 - Employment by State and Industry Sector (Thousands)

State	Major Industry											
		Goods-Producing			Service							
	Total	Mining and logging	Construction	Manufacturing	Trade, transportation, and utilities	Information	Financial	Professional	Education and Health	Leisure	Other	Government
Mississippi	**1,103.4**	**9.2**	**48.3**	**137.0**	**215.9**	**12.5**	**44.2**	**96.9**	**133.3**	**121.9**	**37.9**	**246.2**
Alabama	1,882.6	12.6	79.1	243.0	365.3	22.5	92.5	218.4	218.5	173.7	80.5	376.5
Arkansas	1,177.4	10.7	47.4	155.9	242.8	14.5	49.1	123.0	171.8	102.8	43.5	215.9
Louisiana	1,925.6	54.6	126.5	142.1	378.1	24.9	94.0	202.5	282.0	207.5	63.3	350.1
Tennessee (1)	2,714.3	–	109.2	313.5	575.0	43.0	137.6	336.5	394.1	277.2	104.3	423.8

(1) Mining and logging combined with construction

Source: U.S. Department of Labor, Bureau of Labor Statistics, 2012

Transportation is an essential link to key employment and workforce centers throughout the State of Mississippi. The industries rely heavily on the efficient movement of goods, both for the outbound shipments of their products to national and global markets, as well as for inbound shipments of intermediate goods required for production. Companies chose to locate and congregate at highway interchanges, near rail lines, and cluster in more urbanized areas of the state with access to employment pools or areas that provide ease of access to major transportation facilities and major consumer markets.

[4] U.S. Department of Labor, Bureau of Labor Statistics, 2012

The employment clusters in Mississippi, shown in **Figure 1.2**, identify concentration of businesses that have significant effects on the distribution of population, employment, land use, real estate values, and environment. Many of the shown industry clusters concentrated in Mississippi are highly interconnected, and rely heavily on freight transportation. Employment clusters in Mississippi tend to follow population clusters in terms of their locations and are mainly concentrated in the three geographic areas: Hinds and Rankin Counties around Jackson, counties along the Gulf Coast, and the northeast counties around Tupelo.

Nationwide, in the last 50 years, there has been a consistent trend toward growth in service industries, accompanied by stable or declining activity in the manufacturing sector of the state economy. Not surprisingly, as in most other states, most of Mississippi's job growth is projected to come from the service industries. According to industry employment projections, Mississippi industries projected to significantly increase in employment between 2010 and 2020 include the following sectors, notably all service industries:

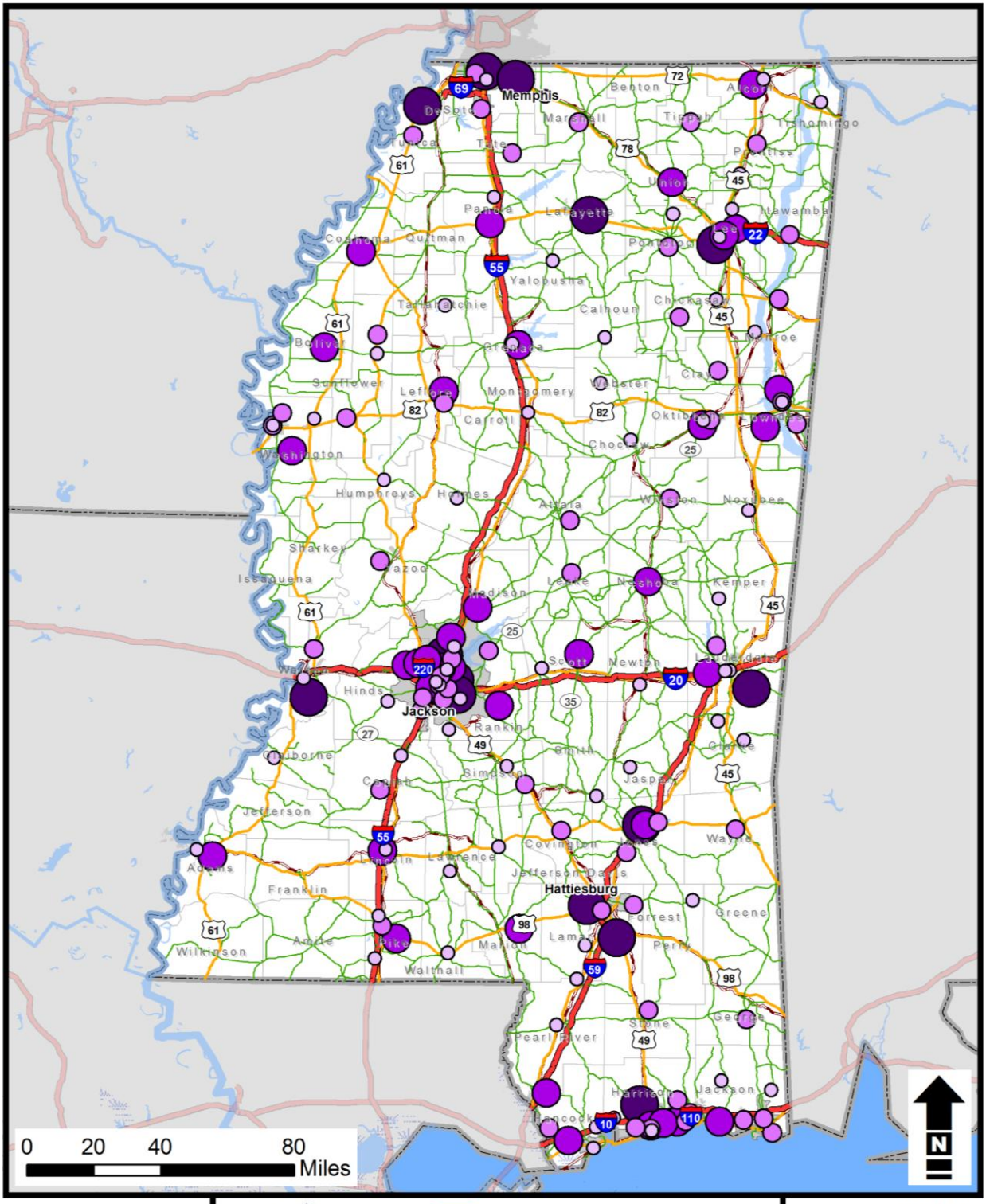
- government (28.8 percent projected increase until 2020)
- professional services (22.5 percent)
- education and Health services (19.5 percent)

Within the freight-intensive industries, the sectors with the most significant projected increase in employment include construction (6.7 percent) and manufacturing (2.6 percent). Within the transportation and warehousing sector (projected to grow at 8.7 percent overall until 2020), the notable projected employment increases (or a projected decrease in the case of pipeline transportation employment), perhaps related to projected goods movement and freight demand for those mode-specific transportation services, are as follows:

- warehousing and storage (12.3 percent)
- air transportation (11.8 percent)
- truck transportation (10.0 percent)
- transit and ground passenger transport (8.3 percent)
- water transportation (4.6 percent)
- pipeline transportation (-9.3 percent)[5]

When annualized, the future employment projections for Mississippi are somewhat lower than in the U.S. over the forecast period, including the strongest job creating sectors in the State: transportation and warehousing, construction, and utilities. This could be linked to the slower overall growth rate of the population and the resulting lower availability of the labor force in the State. Yet despite tamed employment and overall economy projections, Mississippi has continued to attract new businesses to the State, with many existing businesses expanding their operations, leading to an uptick in economic activity. Since the end of 2011, when Mississippi dipped into a short-term recession, all leading

[5] Mississippi Department of Employment Security: *Industry Employment Projections*: http://mdes.ms.gov/media/8194/state.pdf


Memphis
Jackson
Hattiesburg
0 20 40 80
Miles
N
MISSISSIPPI STATEWIDE FREIGHT PLAN
MDOT
LEGEND
Employees per Zip Code
2,000 - 5,000
5,001 - 10,000
10,001 - 20,000
20,001+
Interstate
US Highway
MS Highway
Class I Railroad
Source: ESRI, MDOT, MULTIPLAN 2035.
MAJOR EMPLOYMENT CENTERS
FIGURE 1.2

economic indicators in Mississippi have pointed upwards.[6] The private sector has continued to invest in Mississippi and its infrastructure, with over $1.6 billion in new investments announced in 2012 alone, including:

- Spectra Energy and CenterPoint Energy $1 billion natural gas pipeline
- Port of Gulfport major upgrade
- Kior (biomass) $350 million facility, 350 jobs
- Nissan's $20 million expansion, and hiring 1,000 additional employees
- Hard Rock Hotel and Casino investing in a $32.5 million expansion

Other on-going business investment in recent years have included Huntington Ingalls' $2.4 billion contract with the Navy; Chevron's $1.4 billion expansion of its Pascagoula facilities; HCL Cleantech (biomass) building its headquarters and four plants, an investment of $1 billion; Stion (thin film solar panels) investing $500 million in new plant and facilities; and Silicor (silicon manufacturer) $600 million production facility, and others.[7]

1.4.4 Gross State Product

Mississippi's economy relies on efficient and effective freight and goods movement. The relationship between freight activity and the overall economy in Mississippi is established and evident throughout the entire transportation network, including the ports, airports, railroads, trucking, warehousing and distribution activities. In 2012, Mississippi's total gross state product (or GSP, a measure of the total value added to goods and services due to activities in Mississippi) was $101.5 billion (in constant 2012 dollars), an increase of nearly 55 percent since 2000. The GSP growth in all industries over the last decade has pushed the GSP in the surrounding states to grow at a similar rate, with Mississippi's annual GSP growth comparable to Tennessee, Alabama, and Arkansas, and below Louisiana, as shown in **Table 1.5**. This could be a function of slower projected population growth rate and resulting reduced availability of the labor force in the State.

Table 1.5 - Gross Domestic Product by State (Billions of Current Dollars)

State	Year			2000-2012 % Change	Annual % Growth
	2000	2006	2012		
Mississippi	**65.6**	**85.9**	**101.5**	**54.7%**	**4.6%**
Alabama	116.0	159.1	183.5	58.2%	4.9%
Arkansas	68.3	93.8	109.6	60.3%	5.0%
Louisiana	131.3	204.4	243.3	85.3%	7.1%
Tennessee	177.5	236.3	277.0	56.0%	4.7%

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

[6] *Mississippi Economic Outlook, First Quarter 2013*, published by the University Research Center: http://www.mississippi.edu/urc/downloads/january2013.pdf

[7] Mississippi Development Authority, *Annual Report 2012* & *Annual Report 2011*.

In terms of the industry mix contributing to the GSP in Mississippi, much of it is derived from freight-intensive industries that depend heavily on the movement of raw materials, intermediate goods, and/or finished products. Private goods-producing industries, directly dependent on freight transportation, and including manufacturing, construction, and mining, generated over $24 billion in GSP in 2012, an increase of 46.7 percent since the year 2000, as shown in **Table 1.6**. When combined, those three sectors, along with trade (retail and wholesale), transportation and warehousing, utilities, and agriculture, accounted for $46.0 billion of the GSP in Mississippi in 2012, up from $31.3 billion in 2000, an overall increase of nearly 47 percent in the 2000-2012 time period.

Table 1.6 - Gross State Product: Mississippi's Leading Industries by Value (Millions of Current Dollars)

Industry	Value			Change 2000-2012
	2000	2006	2012	
Government	11,064	14,647	18,388	66.2%
Manufacturing	11,250	14,732	15,254	35.6%
Financial services	9,350	10,851	14,418	54.2%
Real estate	6,239	7,224	9,479	51.9%
Education and health services	4,242	6,374	8,420	98.5%
Retail trade	5,750	7,846	8,144	41.6%
Professional services	3,635	5,670	7,062	94.3%
Construction	3,223	4,750	5,291	64.2%
Leisure	3,647	4,074	4,742	30.0%
Wholesale trade	3,593	4,408	4,551	26.7%
Mining	2,048	2,774	3,687	80.0%
Transportation and warehousing	2,289	3,000	3,555	55.3%
Utilities	1,706	2,433	3,200	87.6%
Agriculture, Forestry	1,443	1,612	2,313	60.3%
Private goods-producing industries*	**16,520**	**22,256**	**24,232**	**46.7%**

*** Private good-producing industries consist of manufacturing, construction, and mining**

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

As the economy in Mississippi is undergoing the transformation and traditional industries employ fewer people, new and targeted businesses continue to emerge and locate in the state (e.g., biotechnology, optoelectronics, flexible manufacturing, energy and alternative fuels, advanced materials, aerospace, and computer software), and the freight transportation needs of these businesses will need to be addressed, as they might differ from the needs of typical industries. The Mississippi Development Authority has identified the following targeted sectors that are highly dependent on competitive goods movement:

- aerospace and aviation
- automotive assembly and supply
- defense and homeland security
- food processing
- chemicals, polymers and plastics

- shipbuilding
- timber and wood products
- warehouse and distribution
- metal fabrication and steel
- communication and information
- technology [8]

These sectors, along the more traditional freight-intensive industries, will continue to rely on the Mississippi's multimodal transportation network. The challenge will be to meet the needs of traditional industries that tend to be concerned most about the overall cost of transportation versus the transportation needs of emerging industries that might also be concerned with other aspects of freight movement operations such as dependable delivery schedules, network reliability, and security for their products.

1.4.5 Trade Activity

Mississippi's economy is intrinsically linked to its ability to move materials, components, and finished goods within the State and to national and international destinations. Based on the trade activity data available from the U.S. Census, Foreign Trade Division, Mississippi, benefiting from its location on the center of the Gulf Coast, is a significant U.S. gateway for interstate and international trade, exporting and importing materials and products destined for or originating from markets throughout the United States and the world. Existing industries in Mississippi, contributing to growth in GSP and employment, rely on its rail, air, highway, port, and pipeline infrastructure to compete with other freight facilities in the region and nation.

Drawing from new Business Roundtable research and U.S. government data, the data below highlights some of the economic benefits of trade activity in Mississippi:

- Mississippi's goods exports have grown four times faster than state GDP since 2002.
- International trade supports an estimated 320,000 jobs in Mississippi.[9]
- Export activities support more than 60,000 direct jobs and 121,000 indirect jobs in Mississippi.[10]
- Trade-related employment grew eight times faster than total employment from 2004 to 2011.

Mississippi exports to other countries (based on the "origin of movement" export data series) have seen steady growth in the last decade. *The Mississippi Goods Movement and Trade Study - Technical Memorandum K* reported that from 2003 to 2009, Mississippi manufacturing exports grew by 176 percent, more than six times faster than the state's overall economy. This trend has continued and even accelerated since then. From 2009 to 2012, just a three-year period, the percentage of manufacturing exports in Mississippi grew by another 87 percent. Exports in Mississippi have tripled in value since 2005.

[8] Mississippi Development Authority: *New and Expanding Business Report*
[9] Business Roundtable
[10] U.S. Bureau of the Census, Foreign Trade Division

Ranging from manufactured goods, aerospace components, food products, electronics and chemicals, Mississippi exports in 2012 were valued at nearly $11.8 billion, with businesses exporting to 186 foreign destinations including Canada, Mexico, China, Panama, and Belgium.[11] Overall, trade from Mississippi reflects a mix of products ranging from agricultural goods ($368 million in exports) to textiles ($716 million) to manufacturing items ($3.4 billion).

By value, Mississippi's largest export categories are mineral fuels and oils, industrial machinery, tanning and dyes, and electrical machinery, with the following top exports in 2012:

- petroleum and coal products - $4.0 billion
- basic chemicals - $1.1 billion
- oil seeds & grains - $756 million
- pulp paper and paperboard $732 million
- motor vehicles - $504 million

By tonnage, the rankings change, as heavier products such as mineral fuels, wood products, paper and fertilizers generate more traffic. Mississippi's leading export category in 2012 was petroleum and coal products, accounting for 32.3 percent of Mississippi's total merchandise exports. When compared to other states, Mississippi ranks among the top 15 state exporters in 11 industries, including fourth in ships and boats ($177 million), fifth in petroleum and coal products ($4.0 billion), and tenth in pulp and paper ($732 million), pesticides and fertilizers ($237 million), and household furniture ($105 million). Mississippi is also the 21st largest exporter of agricultural products, 2nd largest exporter of aquaculture products and ranks among the top five exporters of rice, cotton, and poultry.[12]

1.5 MAP-21 Freight Plan Compliance

In addition to the plan objectives noted above, this Freight Plan has been developed to meet the recommendations of the current federal transportation bill, the Moving Ahead for Progress in the 21st Century Act (MAP-21), which was enacted in 2012. Section 1118 of MAP–21 encourages each state to develop a comprehensive statewide freight plan for guiding state freight transportation investments. Freight projects must be identified in a state freight plan to qualify for an increased share of federal funding. The Freight Plan fulfills the federal recommendation to develop a statewide freight plan that meets all the elements set forth by MAP-21.

The recommended MAP-21 state freight plan elements are listed in **Table 1.7**. Table 1 also identifies the locations within the report where corresponding may be found.

[11] U.S. Bureau of the Census, Foreign Trade Division
[12] ibid

Table 1.7 - MAP-21 Freight Plan Requirements	
Plan Requirements	**Mississippi Freight Plan Development**
Identify significant freight system trends, needs, and issues with respect to the state	Trends: Chapter 2.3.2 Needs: Chapter 4.3 Issues: Chapter 2.4
Describe freight policies, strategies, and performance measures that will guide freight-related transportation investment decisions	Policies: Chapter 6.4.4 Strategies: Chapter 6.3 Performance Measures: Chapter 4.1 and Chapter 6.4.6
Describe how the plan will improve the ability of the state to meet national freight goals established under section 167 of title 23, United States Code	Chapters 6.4.1
Show evidence of consideration of innovative technologies and operational strategies, including intelligent transportation systems, that improve safety and efficiency of freight movement	Overview: Chapter 5 Strategies: Chapter 6.4.3
Consideration of improvements that may be required on routes on which travel by heavy vehicles (including mining, agricultural, energy cargo or equipment, and timber vehicles) is projected to substantially deteriorate roadways condition	Chapter 2.4.3 (MDOT finds no indication of extraordinary deterioration of highway network due to mineral or resource extraction or harvest activity)
An inventory of facilities with freight mobility issues, such as truck bottlenecks, within the state, and a description of the strategies the State is employing to address those freight mobility issues	Systems level: Chapter 2.4.1 MFN System: Chapter 4.2

Source: FHWA I*nterim Guidance on State Freight Plans and Freight Advisory Committees* (Interim Guidance, FR, 15 October 2012)

1.6 Freight Advisory Committee

To guide preparation of the Mississippi Statewide Freight Plan, MDOT established a Freight Advisory Committee (FAC), consistent with the Federal Highway Administration's *Interim Guidance on State Freight Plans and Freight Advisory Committees* (Interim Guidance, FR, 15 October 2012). FHWA strongly recommends that state freight plans be prepared in collaboration with cross-section of public and private freight stakeholders. According to FHWA, a state FAC should be charged with:

- advising the State on freight-related priorities, issues, projects, and funding needs
- serving as a forum for discussion of State decisions affecting freight transportation
- communicating and coordinating regional priorities with other organizations
- promoting the sharing of information between the private and public sectors on freight issues
- participating in the development of the State's Freight Plan

The FAC in Mississippi was established at the start of the study and advised the MSFP development team at key stages of the study, including three FAC meetings. Throughout the study, the FAC was asked

to disseminate information about the MSFP activities to their constituencies and business partners in an attempt to gain additional input from their organizations and agencies. With assistance from the FAC, the project team gained a better understanding of the demands from freight movement on statewide and regional transportation infrastructure and was able to focus and identify projects that, if implemented, will improve freight flow and support the state's economic development activities.

Ultimately, the FAC provided meaningful input to the MSFP and shaped the outcomes of the study by:

- collaborating and advised the plan development team at key stages in developing the MSFP
- assisting in identifying freight trends, needs, and issues
- providing suggestions for Regional Stakeholder composition and outreach strategy
- disseminating information about the MSFP activities to constituencies and business partners
- identifying freight significant corridors and concerns
- offering guidance on MSFP goals and objectives
- providing opinion on candidate performance measures and proposed additions/deletions
- providing input on MSFP strategies and recommendations

The FAC included representatives of public and private sector transportation and government organizations. The identified FAC member categories, shown in **Table 1.8**, comply with the *Interim Guidelines*, viewing freight transportation as part of a supply chain where goods are moved between origins and destinations. The FAC represented the following industry categories/segments and their cited focus/specialty:

- Freight carriers – engaged in the business of transporting goods and materials
- Shippers and receivers – entities in need of transporting or receiving goods
- Freight forwarders/terminal facility operators – providing services to facilitate the transportation of shipments with a focus on arranging storage and shipping of merchandise
- Private infrastructure owners – railroads with insights about day-to-day freight operations
- Independent transportation authorities – seaport and airport authorities
- Freight-related associations – representing air cargo companies, ports and waterway groups, railroad companies, and trucking companies
- Organizations for shippers – agricultural associations, associations for manufacturers, and associations representing warehousing and distribution
- Academia/research – independent experts at university centers and organizations with resources for freight planning and related studies
- Governmental bodies:
    - Federal agencies – defining legislative and financing requirements at the national level.
    - Regional and local governments – providing insight into projects that have benefits to freight flows within specific regions
    - Tribal governments – were requested to join but did not participate
- Other – freight-related associations, organizations representing the freight industry workforce, and environmental, safety, and community organizations to represent both public and private sector interests affected by freight operations

Table 1.8 - FAC Member Categories			
Freight Carriers	**Shippers & Receivers**	**Non-profit**	**Government**
Trucking	Manufacturers	Economic Development Agencies	Federal Government
Railroads	Utilities	Regional Planning	State DOT
Ports and Waterways	Refineries	Environmental Agencies	Local Governments
Airports	Military	Academia/Research	
Pipelines	Agriculture		

In the future, the envisioned principal role of FAC would be to facilitate strategic information exchange and coordination among Mississippi's diverse group of freight stakeholders regarding freight needs and potential solutions in the state. The FAC members will meet periodically and advise MDOT on freight issues, priorities, projects, funding needs for freight improvements, and promote freight transportation as a critical component of the state's economic vitality and competitiveness. The FAC will also advise MDOT during updates to the MSFP. The details behind ongoing roles and responsibilities of the Mississippi FAC will be determined by MDOT as part of the study implementation plan.

2 Key Freight Issues and Opportunities

The freight context in Mississippi points to an increase in freight demand that will cause more strain on the State's freight transportation system as more freight by both volume and value moves within and through Mississippi. While much of the growing demand for freight movement in Mississippi can be absorbed by the existing freight network and the supporting facilities, a new comprehensive approach to statewide freight planning is desirable for the State's freight economy to flourish and remain competitive in the global and regional markets. To guide MDOT investment and operational actions targeted with meeting ongoing freight movement needs, it is desirable to base those actions on freight-specific goals and objectives that reflect both national freight policy and over-arching state transportation goals.

This chapter provides background information to set a context for recommended freight system improvements in Mississippi. It offers a context for development of the plan and of key Mississippi freight issues and opportunities. This includes description of 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 the implications of that data; and summary of freight system strengths and weaknesses.

2.1 Strategic Freight Goals, Objectives, and Freight System Performance Measures

The identification of clear goals and objectives to guide freight planning and investment in Mississippi should reflect and be responsive to the national freight policy goals, as well as the State's overall statewide transportation and economic goals and strategies. This linkage can ensure consistency of the future strategic freight plans and improvements with other infrastructure plans and investments. This section defines Mississippi freight goals and objectives, develops related freight system performance measures that are used to assess freight system performance and guide future improvements, and relates those freight plan elements to national freight goals.

2.1.1 National Freight Goals

The most recent federal transportation authorization bill, MAP-21, called for strategic investment in freight transportation and operational improvements with a goal of improved system performance. It charges the USDOT with establishing a two-part National Freight Network, the "primary" and "rural." The Primary Freight Network will feature the 27,000 centerline miles of existing roadways that are most essential to freight movement. Section 1118 of MAP-21 specifies that a State freight plan must include a description of how it will improve the ability of a state to meet the National Freight Program goals established in MAP-21 (23 U.S.C. 167). The following is a summary of the goals of the National Freight Policy established in MAP-21:

1. improve the contribution of the national freight transportation network towards enhancing the nation's economic efficiency, productivity, and competitiveness
2. reduce congestion on the freight transportation system
3. improve the safety, security, and resilience of the freight transportation system
4. improve the state of good repair of the nation's freight transportation system

5. use advanced technology, performance management, innovation, competition, and accountability in operating and maintaining the freight transportation system
6. reduce adverse environmental and community impacts of the freight transportation system[1]

While USDOT does not mandate that states adhere to these policy goals as the states develop state freight plans, they encourage states to consider these goals, to promote consistency across the nation. USDOT recommends that a state freight plan include a discussion of the State's strategic goals for freight transportation. These goals would include the goals of the National Freight Policy above, but States are also allowed to add other strategic goals (USDOT also recommends that State Freight Plans indicate which goals are most important to the State). Accordingly, the goals and objectives that ought to guide freight planning and investment in Mississippi should be linked not only to the National Freight Policy goals, but also the State's overall statewide transportation and economic goals and strategies. This linkage can ensure consistency of the future strategic freight plans and improvements with other infrastructure plans and investments.

2.1.2 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 Mississippi's recently completed statewide multimodal transportation plan, MULTIPLAN 2035, as well as national freight goals defined in the National Freight Policy. Mississippi's 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 goals were established to guide MDOT's transportation program delivery efforts. Because it is understood by USDOT that a state's adopted long-range plan will serve as the umbrella under which a state's freight plan is developed, any freight-specific goals should reflect these broader goals. As defined in MULTIPLAN 2035, Mississippi's transportation goals are as follows:

- improve accessibility and mobility for Mississippi's people, commerce and industry
- ensure high standards of safety in the transportation system
- maintain and preserve Mississippi's transportation system
- ensure that transportation system development is sensitive to human and natural environmental concerns
- provide a transportation system that encourages and supports Mississippi's economic development
- create effective transportation partnerships and cooperative processes that enhance awareness of the needs and benefits of an intermodal system
- provide a sound financial basis for the transportation system

[1] MAP-21: http://www.gpo.gov/fdsys/pkg/BILLS-112s1813es/pdf/BILLS-112s1813es.pdf

Table 2.1 shows the correlation between the National Freight Policy Goals and the general long-range transportation goals for Mississippi identified in MULTIPLAN. Each MAP-21 national freight policy goal is broadly reflected in one or more of stated state goals.

Drilling down from the national freight policy goals and Mississippi's overall transportation goals, the freight-specific goals and objectives forming the basis for the MSFP were identified.[2] In the proposed freight goals, MDOT seeks to reflect the following guiding principles, calling for goals that:

1. consider the operations of the existing freight transportation system
2. reflect need for added physical capacity to the freight transportation system
3. consider equitable distribution of costs and benefits among parties affected by the freight system to improve productivity
4. consider statutory, regulatory, and institutional barriers to improved freight transportation performance
5. reflect emerging transportation needs
6. consider the safety and security of the freight transportation system
7. recognize the environmental, health, energy, and community impacts of freight transportation

The MSFP goals and associated objectives are freight-specific and relevant to Mississippi and reflect the national freight policy goals, Mississippi's overall transportation goals, and the guiding principles noted above. The proposed freight goals for the MSFP freight focus areas reflect and also seek to be responsive to the *Mississippi Goods Movement and Trade Study*, *Mississippi State Rail Plan*, and *MULTIPLAN 2035.* The evident similarities between the national and the identified Mississippi freight goals shown in **Table 2.2** should ensure that freight system improvement strategies in this MSFP improve the state's ability to provide adequate supply to meet the increasingly more demanding freight needs.

Through the course of the study, the goals and objectives formed the basis for defining freight system performance measures that include benchmarks and performance targets. Since the existing MS freight transportation network, along with freight facilities and supporting infrastructure, is owned and maintained by various private and public entities, a high level of cooperation and forging of partnerships between the private sector freight carriers, shippers, and industry, as well as State, regional, and local governments, and regional authorities (e.g., port authorities) will be necessary to support, promote, and achieve the proposed goals, objectives, and performance measures. Existing State policies and strategic investments can augment and help leverage private sector investment in freight and solidify working relationships between the private and public sectors.

[2] Mississippi's freight goals, objectives, and performance measures were developed in consultation with the Mississippi Freight Advisory Committee (MFAC).

Table 2.1 - Comparison of National Freight Policy Goals and Mississippi Transportation Goals								
Freight Focus Area	**National Freight Policy Goal**	**Accessibility and Mobility: Improve accessibility and mobility for Mississippi's people, commerce and industry**	**Safety: Ensure high standards of safety in the transportation system**	**Maintenance and Preservation: Maintain and preserve Mississippi's transportation system**	**Environmental Stewardship: Ensure that transportation system development is sensitive to human and natural environmental concerns**	**Economic Development: Provide a transportation system that encourages and supports Mississippi's economic development**	**Awareness, Education and Cooperative Processes: Create effective transportation partnerships and cooperative processes that enhance awareness of the needs and benefits of an intermodal system**	**Finance: Provide a sound financial basis for the transportation system.**
Freight movement & economic vitality	Enhancing economic efficiency, productivity, and competitiveness					**X**		**X**
Congestion reduction	Reducing congestion	**X**						
Safety	Improving safety, security, and resilience		**X**					
Infrastructure condition	Improving State of Good Repair			**X**				
System reliability	Using advanced technology, performance management, innovation, competition, and accountability in operating and maintaining the freight network	**X**					**X**	
Environmental sustainability	Reducing adverse environmental and community impacts				**X**		**X**	

Table 2.2 - Mississippi Freight Goals, Objectives, and Performance Measures			
MULTIPLAN 2035 Goals (1)	**MSFP Freight Goals**	**Freight Objectives**	**Freight Network Performance Measures**
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.	Statewide annual funds invested by MDOT for freight-related projects through its Multi-Modal Transportation Improvement Program.
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.	Annual hours of truck delay (AHTD)(2) on the MFN Tier I and Tier II highway corridors. (3) For each corridor segment, AHTD = daily truck delay x 300, where daily delay = $\frac{\text{Daily Truck VMT}}{\text{Actual Travel Speed}} - \frac{\text{Daily Truck VMT}}{\text{Free Flow Speed}}$
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.	Statewide annual crashes, injuries, and fatalities involving heavy trucks. (4)
			Statewide annual highway-rail incidents involving heavy trucks at at-grade rail crossings. (4, 5)
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.	Percentage of the MFN highway pavement in good condition based on the International Roughness Index (IRI).
			Number of posted weight-restricted highway bridges on the MS Freight Network.
			Statewide percent of rail network supporting 286k weight limits. (4) (5)
			Channel depth for MS coastal ports (maintain authorized depth) and river ports (response time to recover to 12' minimum depth after a drought or flood). (5)

Table 2.2 - Mississippi Freight Goals, Objectives, and Performance Measures			
MULTIPLAN 2035 Goals (1)	**MSFP Freight Goals**	**Freight Objectives**	**Freight Network Performance Measures**
			Volume to capacity ratio (V/C) on the airports serving MFN: (Jackson-Evers International Airport (JAN) and Gulfport-Biloxi International Airport (GPT) (capacity includes the total storage space for air cargo, ramp space and capacity in tonnage; volume refers to cargo volumes in tonnage). (6)
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.	Statewide annual number of hazmat spills across the MFN. (4)
			(Future measure) Designated MS nonattainment areas for all criteria pollutants. (7)

(1) MULTIPLAN's 'Finance' goal is not included due to its limited applicability for freight movements

(2) The methodology for calculating daily truck delay involves using the Mississippi Statewide Travel Demand Model to obtain the free flow speed and the congested speed as well as the number of trucks along the highway links that represent the MFN facilities. Daily truck delay is calculated as the difference between the free flow time for trucks and the congested travel time for trucks. Once the daily truck delay is calculated, it is multiplied by 300 to obtain the annual hours of truck delay (AHTD). AHTD can then be compared between competing scenario networks, including the "no-build" scenario.

(3) Referenced 'Mississippi Freight Network' is comprised of principal highways, railroad lines, ports and waterways, cargo airports, and associated intermodal distribution and warehousing facilities along and within identified Tier I and Tier II freight corridors.

(4) Performance Measure can also be applied to the MS Freight Network Tier I and Tier II corridors individually or collectively.

(5) Additional Performance Measures for rail and ports and waterways will be identified as part of the Statewide Rail Plan and Ports plans.

(6) *Mississippi Goods Movement and Trade Study,* 2012.

(7) Data and assessment to be provided by Mississippi Department of Environmental Quality (DEQ)

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

Safe, efficient movement of freight and goods within, into, and through Mississippi can be significantly affected by the institutional context under which the producers and movers of that freight must operate. This can include ownership, funding, and regulation, by both the public and private sectors. Existing regulations affecting the freight industry and the patchwork of infrastructure ownership can cause challenges in the implementation of freight-related investments. Examining the roles and responsibilities of the many public and private stakeholders that are part of the freight system is an important element of this statewide freight planning effort.

In Mississippi, multiple private and public entities are responsible for planning, preservation, operations, maintenance and improvements of the freight network infrastructure. Multiple layers of public and private entities involved in freight infrastructure development, operations, maintenance, and financing will be tasked with sustaining effective and efficient freight flows in the future. Freight is unique because there is an unusually large and diverse number of people, companies, agencies, and authorities involved in the movement of freight, requiring many complex interactions among the involved parties. Effective communication and cooperation among freight stakeholders, particularly in relation to the freight network priorities, can increase the network efficiency and reduce the cost of freight movement.

2.2.1 Policies and Regulation

Freight movements within, into, and through Mississippi and the implementation of freight-related investments are affected by the institutional context within which freight industries operate. Multiple private and public entities are responsible for planning, preservation, operations, maintenance and improvements of the freight network infrastructure in Mississippi. To facilitate the freight movements, 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. These include the NEPA review process, Clean Water Act, and Clean Air Act, along with regulations affecting freight operations, including noise regulations, and truck and locomotives idling regulations.

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,

Mississippi offers numerous tax advantages and additional incentives for freight companies. MDOT ensures that federal and state legislative requirements, policies, and guidelines for transportation are reflected in MDOT's operations and long-range plans. Local and regional governments affect freight industry through the Land Development Ordinances that shape the location, intensity, and character of new development and redevelopment and impact the location of industries.

While freight providers generally operate in the private sector, they are subject to federal, state, and local policies and regulations that can significantly affect both their operations and general public safety and welfare. In Mississippi, various federal and State agencies and freight-relevant authorities are responsible for ensuring the industry complies with an assortment of rules and regulations.

Federal Freight Policy (MAP-21)

In 2012, President Obama signed into law a new two year transportation reauthorization bill, the Moving Ahead for Progress in the 21st Century Act (MAP-21). MAP-21 recognizes the importance of a strong freight network to ensure competitiveness in the global economy. The reauthorization bill includes a variety of freight-related provisions which:

- Require the development and implementation of a National Freight Policy, Plan, and Network to improve the condition and performance of the goods movement system.
- Authorize USDOT to increase the federal share for interstate highway projects up to 95 percent and any other non-Interstate surface transportation projects that improve the movement of freight up to 90 percent. To be eligible, USDOT must certify the project enhances the efficient movement of freight, including making progress toward meeting performance targets for freight movement.
- Encourage states to develop state freight plans that outline immediate and long range plans for freight related transportation investments.
- Encourage states to form Freight Advisory Committees to assist in the development of State Freight Plans, including near-term and long-term planning and investment to support the movement of freight.
- Require USDOT to develop a Freight Strategic Plan by October 2014, to be updated every 10 years.
- Require USDOT to submit to Congress a National Priority Freight Network of 27,000 miles (3,000 rural freight miles).[3]
- Require USDOT to establish performance measures tied to the freight movement on the Interstates. After USDOT establishes measures, States and MPOs will set performance targets and be required to report biennially on their progress toward meeting the targets.

Federal Regulation of Freight

The resilience of not just the Mississippi economy but of the entire U.S. economy depends on a reliable multi-modal freight transportation system that efficiently links businesses with consumers, suppliers, and markets. This robust nationwide system connects U.S. businesses and consumers with agricultural,

[3] FHWA, *MAP-21 Summary of Highway Provisions*: http://www.fhwa.dot.gov/map21/summaryinfo.cfm

economic, logistics, and manufacturing centers across the nation and the world. Since freight movements transcend the States' borders, the regulation of freight-moving industries largely takes place at the national level. The regulation of freight movement at the federal level is complex, governed by multiple agencies regulating freight movement for all the modes. USDOT's mode-specific agencies such as FHWA, FRA, and FAA promote and enforce highway, rail, and aviation safety regulations, respectively, and engage in other aspects of transportation planning:

- FHWA's Office of Freight Management and Operations works with other FHWA offices and with other parts of USDOT to develop freight policy to ensure efficient and safe freight mobility.
- FRA's Office of Railroad Policy and Development (RPD) develops and implements programs that provide financial support, research and development, and policy analysis and guidance for the freight rail industry and its various stakeholders.
- Within the FAA, the Office of Airport Planning and Programming is responsible for national airport planning, environmental and social requirements, airport grants, property transfers, and facility charges.
- The U.S. Army Corps of Engineers (USACE) regulates various activities involving waterways and issues permits for the construction of navigational improvements.
- The Maritime Administration (MARAD) within USDOT promotes the use of waterborne transportation and its seamless integration with other segments of the transportation system and plays a key role in implementing the U.S. marine transportation policy objectives.
- The Office of Pipeline Safety (OPS), within USDOT, Pipeline and Hazardous Materials Safety Administration, deals with safety and inspection standards for the pipeline industry, as well as incident reporting and management protocols.
- The Surface Transportation Board has jurisdiction over railroad rate and service issues and rail restructuring transactions; trucking and non-contiguous ocean shipping companies freight rates; and rates and services of pipelines not regulated by the Federal Energy Regulatory Commission.
- USDOT is charged with implementation of the freight transportation requirements of the MAP-21, including the development of the National Freight Plan.
- Security regulations are administered by the Transportation Security Administration (TSA), the Customs and Border Protection (CBP), and the Department of Homeland Security (DHS). The TSA is responsible for the Hazmat Threat Assessment Program, Air Cargo Screening, and Federal Air Marshal training and employment. The CBP is responsible for Customs and Trade Security. DHS, FMCSA, and USCG are responsible for rail, trucking, and marine security, respectively.
- Trade policy and economic regulation occurs through interstate and international trade and other agreements and agencies such as the Surface Transportation Board (STB).

State Freight Plans and Policies

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. At the state level, Mississippi recognizes that the federal government safety, security, and environmental regulations constitute the rules in the State, followed by the Department of Transportation and other state, regional, and local entities, as well as all affected private businesses in Mississippi.

MDOT has acknowledged the importance of safety as it relates to transportation by ensuring high safety standards for the transportation network across Mississippi as one of the principal MUTLIPLAN 2035 goals. To prevent, protect, respond to, and recover from terrorist attacks, major disasters, and other emergencies, the Mississippi Department of Public Safety, Office of Homeland Security, prepared the *Mississippi State Homeland Security Strategy* (Revised 2011). The strategy includes several goals and objectives relevant to freight transportation, such as identifying the State's critical infrastructure and categorizing those facilities within guidelines established by federal, State and local authorities; and implementing a Maritime Safety and Security Initiative to enhance current capabilities of detecting and preventing all hazard incidents on the State's major waterways.

Mississippi's environmental regulations are similar to federal regulations. MAP-21 encourages States to implement "planning" approaches to meet environmental regulations in project development, such as the development of programmatic mitigation plans by States or MPOs. There is one identified non-attainment area in Mississippi, the northern portion of Desoto County, where the Federal Clean Air Act Requirements and Nonattainment and Maintenance Areas are relevant. The Clean Water Act, requiring permits from the USACE for activities that could discharge dredge or fill material into U.S. waters, affects Mississippi's ports and waterborne freight movements, for example, in instances of port channel dredging or landside capacity expansion. In Mississippi, 18 freight companies do participate in the EPA's SmartWay program, with 17 acting as partners (14 trucking, two logistics companies, and one freight shipper) and one as an affiliate.[4] Mississippi does offer numerous tax advantages and additional incentives for freight companies offer freight businesses a competitive edge.

MDOT develops and updates the State's long-range transportation plan and mode-specific statewide plans. The latest statewide transportation plan, MULTIPLAN 2035, identifies long-term modal needs and establishes a vision and policy objectives for the State's highways and roadways, ports and waterway facilities, railroads, airports, bicycle and pedestrian facilities, and public transportation. The Statewide Transportation Improvement Program (STIP) prioritizes those needs and identifies the specific capital improvement projects and transportation program initiatives that can be implemented across the State within the next four years (with the latest STIP covering Fiscal Years 2012-2015).

While MDOT's Planning Division is responsible for planning efforts such as Multiplan 2035 and STIP, other MDOT divisions are responsible for project delivery. The Office of Intermodal Planning (OIP) includes the operating divisions of all modes of transportation in Mississippi with the exception of highways. Included within OIP are the divisions of Aeronautics, Public Transit, and Ports & Waterways. The OIP coordinates a multimodal program to facilitate freight movement between local, national, and international markets. The Roadway Design Division is responsible for the design and preparation of plans for construction of roadway projects and the Bridge Design Division is responsible for safely and cost effectively designing and maintaining Mississippi's Highway and interstate bridges and other structures.

[4] EPA: http://www.epa.gov/smartway/partnerlists/partner-list.htm

Local Freight Policies

Local and regional governments affect freight industry through enactment of the Land Development Ordinances (LDO), including the Zoning Ordinance and Subdivision Regulations that shape the location, intensity, and character of new development and redevelopment and impact the location for industries within localities. Regional governments also develop short and long-range comprehensive plans that often address freight issues – although they are not likely to set freight policies. In some cases, regional freight plans have been developed. For instance, the *Memphis Regional Freight Infrastructure Plan* (2009) developed on behalf of the Greater Memphis Chamber identifies the capabilities and capacities of the region's current freight infrastructure systems (including multiple counties in the northwestern section of Mississippi) and prioritizes future regional freight infrastructure investments and funding requests. Often overlooked, yet an important factor in freight planning, are the first-hand relationships and the resulting insight knowledge that local government representatives develop with freight businesses located within their jurisdictions.

2.2.2 Mississippi Freight Programs

Implementing programmatic and financial measures to address freight movement can be challenging given the institutional context of freight. Multiple private and public entities are responsible for planning, preservation, operations, maintenance and improvements of the Mississippi freight network infrastructure. Mississippi offers financial and logistical assistance for freight network investments through the following agencies/programs:

- MDOT: responsible for financing, building, and maintaining the 10,899 state-maintained centerline miles and 5,775 bridges and structures operated and maintained by MDOT. Provides funding for other modes through the Office of Intermodal Planning. MDOT's FY2012 budget was $1.27 billion. State motor fuel taxes and federal funds provided 71.9 percent of the Department's funding for FY 2012. This included $289 million from state motor fuel taxes. The current tax rate is set at 18.4 cents per gallon with 73 percent of revenues directed to MDOT for investment on the MDOT operated and maintained portion of the MS' transportation system, and 27 percent to Mississippi counties, to assist with construction and maintenance of roadways operated and maintained by them.[5]

  An example of innovative financing benefiting freight movements is the commitment by the Mississippi Legislature passing a law in 2001 creating the Multimodal Transportation Improvement Fund (MTIF) that allows for appropriation of funds for MDOT for multi-modal capital improvements projects at ports, airports, and publicly owned railways. MDOT administers the project selection and coordinates the selection process, with the actual selection process oversight done by committees comprised of local representatives for the specific modes. In 2012, MDOT allocated $10 million to fund the program with the majority of the funding allocated to projects benefitting the private freight industry, including $3.4 million

[5] *MDOT: 2012 Annual Report*

obligated for airport improvements around the State; $3.8 million obligated for improvements to the State's ports; and $1.2 million allocated to railroad projects.[6]

- Mississippi Development Authority (MDA): through its Financial Resources Division, this State-run agency administers a variety of incentive programs (including loans, grants, and other programs) designed to assist local governments with infrastructure development. MDA administers a number of other State-funded programs that can fund freight infrastructure improvements, including the Local Governments Capital Improvements Revolving Loan (CAP Loan) Program, Freight Rail Service Projects Revolving Loan (RAIL) Program, Rural Impact Fund (RIF) Program, Development Infrastructure Program (DIP), Small Municipal and Limited Population County (SMLPC) Grant Program, Access Road Program, Airport Revitalization Program, and Economic Development Highway Program, among others. The table in **Appendix A** highlights major programs administered by MDA relevant to freight movements.

  Large infrastructure projects may also qualify for funding through the Mississippi Major Economic Impact Authority, (MMEIA), also administered by the MDA. Unique in the nation, this program allows the State to issue general obligation bonds to assist local communities that need to meet development requirements of large capital projects. The MMEIA is designed to allow the State to assist local communities in meeting the development requirements inherent in large capital projects, thereby generating an investment in the quality of life in such communities. In terms of eligibility, projects may include, but are not limited to:

  - New projects or expansions of existing facilities, with a minimum initial investment of $300 million. Capital investment of $150 million that creates 1,000 net new jobs or if creating 1,000 net new jobs that pay 125 percent of the annual State wages.
  - Industrial or commercial projects, research and development, warehousing, distribution, transportation, processing, mining establishments, government projects, and tourism facilities.

- Local and regional authorities and governments:
  - Counties operate and maintain the majority of Mississippi's roadways. MDOT's Office of State Aid Road Construction (OSARC) administers:
    - Mississippi's State Aid Road Program to assist Mississippi's 82 counties in the construction and maintenance of secondary, non-state owned roads and bridges
    - Local System Bridge Replacement and Rehabilitation Program for the repair of bridges or bridge replacements, as well as administering special projects funded through the FHWA and the MDA
    - FHWA's National Bridge Inspection and Inventory Program for locally owned bridges

[6] *MDOT: 2012 Annual Report*

- Mississippi Association of Planning and Development Districts (PDDs): compromised of 10 Districts that provide services to all counties and municipalities in Mississippi, they administer grants and loans supporting local infrastructure improvements

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[7], 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 its origin and destination
- intrastate (internal) cargo movements, where both origin and destination are located within the state

2.3.1 Current 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. **Table 2.3** and **Figure 2.1** show the distribution of the commodity by transportation modes and direction of travel.

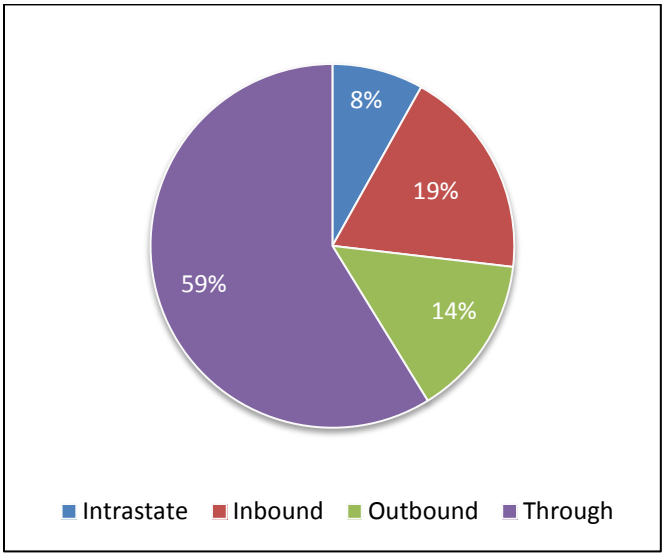
A detailed breakdown of the commodity flow shows how freight travels between Mississippi and the rest of the nation. **Figure 2.2** shows the major regions defined for the continental US relative to Mississippi. The highest freight flows are through movements between the regions east and west of Mississippi with 149 million tons of commodity flows in 2011. These freight flows passing through Mississippi likely use I-20, I-59, and I-10 corridors as the main thoroughfares. The next highest through flows are between north and west with 51 million tons. This segment of through flows is likely to travel through the I-59 or I-55 corridors that connect the north region to the ports in the New Orleans, Louisiana. Mississippi also has higher inbound and outbound freight flows connecting to the west and east regions than with the north region. **Table 2.4** shows the commodity flows between the regions in a matrix Origin-Destination (OD) format.

[7] IHS Global Insights, Transearch 2011 database

Table 2.3 – 2011 Annual Commodity Flows					
Direction	**Truck**	**Rail**	**Water**	**Air**	**Total**
Tonnage (in 000s)					
Inbound	45,579	14,804	18,447	7	78,838
Outbound	37,366	8,734	14,352	1	60,452
Intrastate	32,423	1,448	285	<1	34,156
Through	154,033	93,389	<1	<1	247,421
Total	269,401	118,375	33,084	8	420,868
Value (in $000s)					
Inbound	52,977,491	9,829,466	9,266,898	1,531,507	73,605,361
Outbound	49,762,579	11,054,535	9,289,771	63,157	70,170,042
Intrastate	13,421,809	3,025,791	195,290	<1	16,642,891
Through	268,213,527	102,789,968	<1	<1	371,003,495
Total	384,375,406	126,699,760	18,751,959	1,594,664	531,421,789

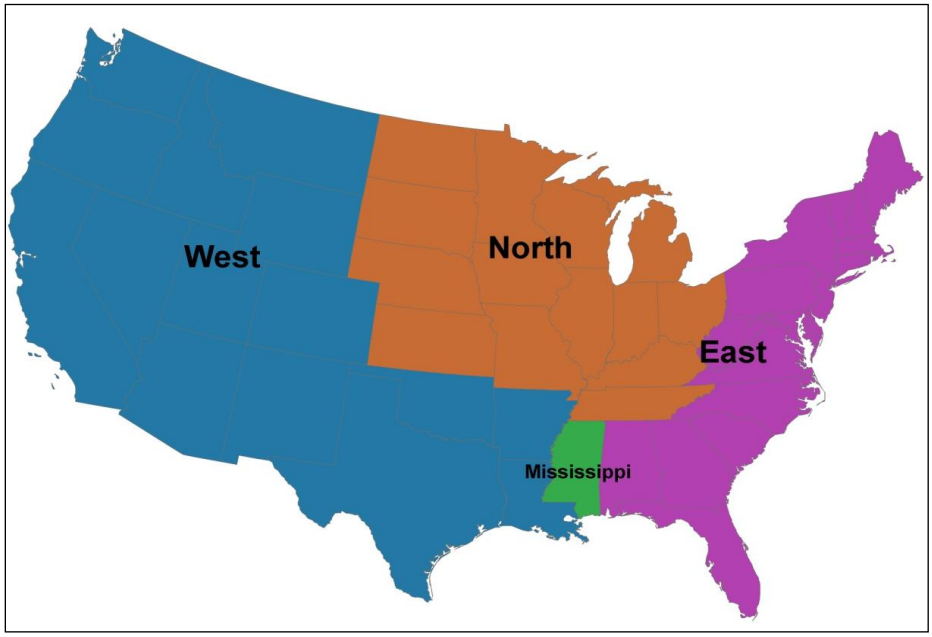
Source: IHS Global Insights TRANSEARCH, 2011.

Figure 2.1: 2011 Commodity Tonnage Flow Share by Direction



Source: IHS Global Insights TRANSEARCH, 2011.

Figure 2.2: Commodity Flows Regions



Source: IHS Global Insights TRANSEARCH, 2011.

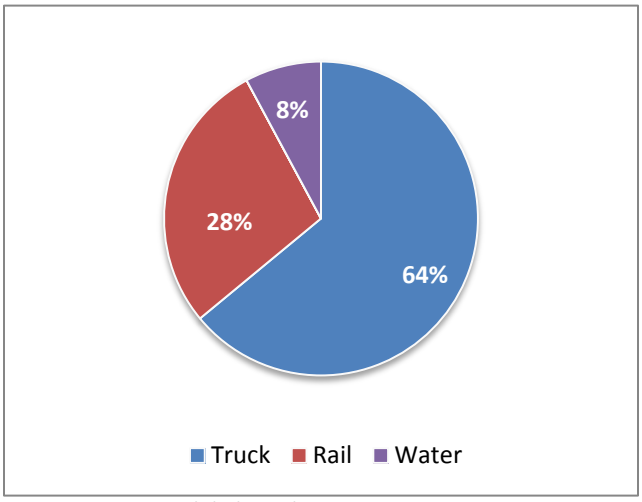
Table 2.4 - 2011 Annual Tonnage Flow by Regional Origin and Destination (in 000s)

Direction (From/To)	Mississippi	East	West	North	Total
Mississippi	34,156	24,315	23,029	13,107	94,608
East	30,426	4,062	39,294	6,763	80,546
West	32,781	109,847	6,500	29,424	178,552
North	15,631	27,515	21,610	2,406	67,162
Total	112,995	165,740	90,433	51,700	420,868

Source: IHS Global Insights TRANSEARCH, 2011.

Truck mode is the dominant means used for commodity freight with a share of 64 percent of the total freight movement, followed by rail with 28 percent, and the water mode with 8 percent. Air freight is minimal with regard to the total freight shipped by weight, as shown in **Figure 2.3.**

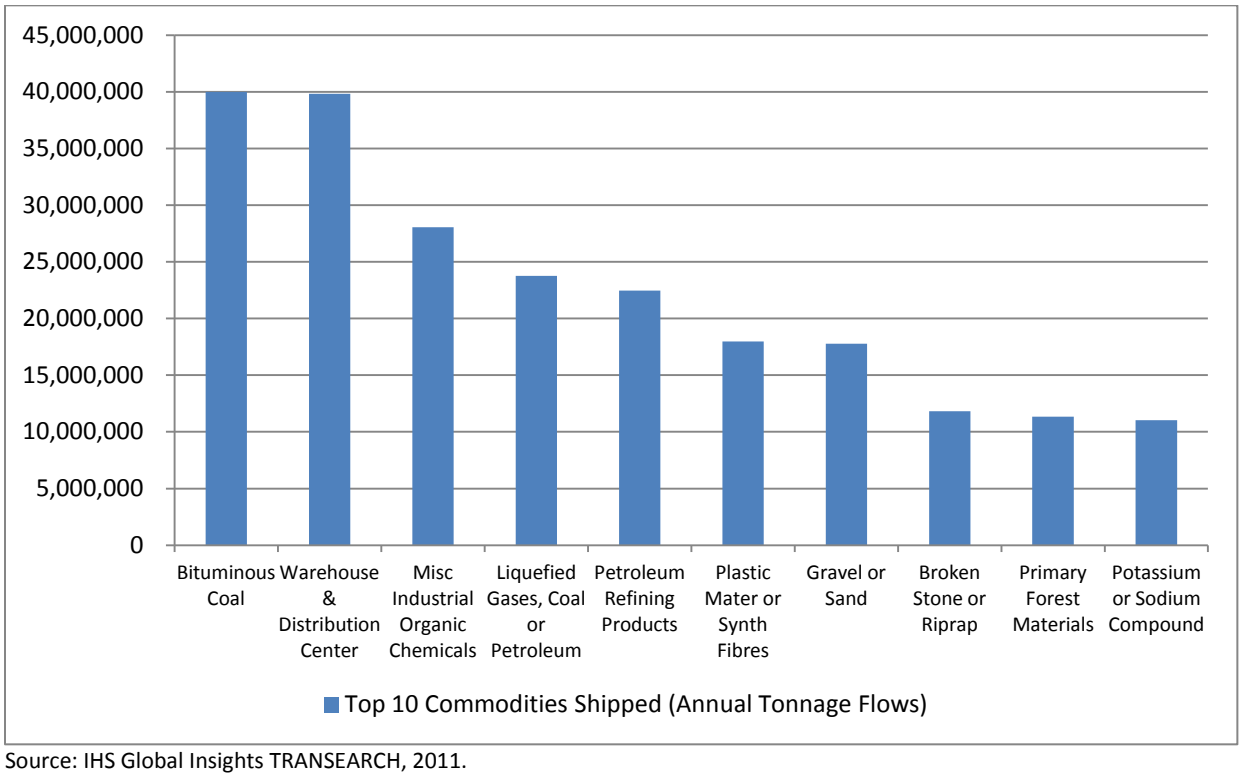
Figure 2.3: 2011 Commodity Freight Mode Share



Source: IHS Global Insights TRANSEARCH, 2011.

The top carried commodities are bituminous coal, secondary traffic related to warehouse distribution centers, and chemical and petroleum products. The bituminous coal and freight related to warehouse distribution centers each account for 40 million tons of volume dominating all other types of commodities. **Figure 2.4** shows the top 10 ranked commodities in 2011.

Figure 2.4: 2011 Top 10 Commodities Shipped (Annual Tonnage)



Source: IHS Global Insights TRANSEARCH, 2011.

2.3.2 Forecast of Freight Flows

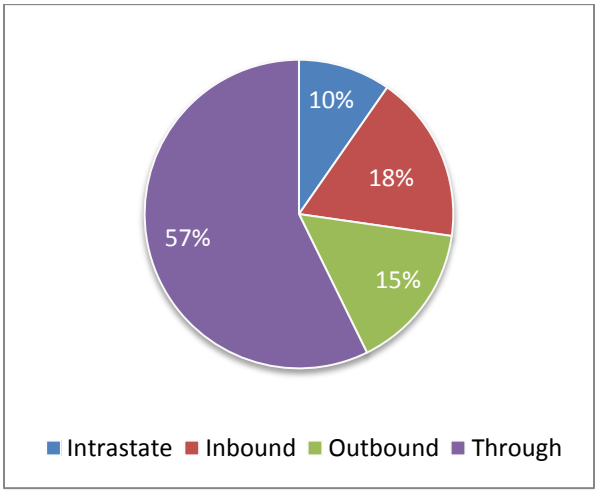
In 2040, a projected 624 million tons of freight will be shipped through the facilities in Mississippi, valued at a total of 1 trillion dollars. This amounts to a projected 48 percent increase in total freight tonnage and an 89 percent increase in the value of shipments from 2011 to 2040. The commodities 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. **Table 2.5** and **Figure 2.5** show the distribution of the projected 2040 freight flows.

Table 2.5 - 2040 Annual Commodity Flows

Direction	Truck	Rail	Water	Air	Total
Tonnage (in 000s)					
Inbound	66,635	20,738	22,384	17	109,773
Outbound	67,163	13,782	15,652	2	96,600
Intrastate	58,404	1,766	316	<1	60,486
Through	241,056	116,483	<1	<1	357,539
Total	433,258	152,770	38,352	19	624,398
Value (in $000s)					
Inbound	94,806,908	13,091,722	9,816,423	4,139,842	121,854,896
Outbound	101,974,632	21,698,221	9,258,603	310,039	133,241,495
Intrastate	20,862,532	2,567,935	179,918	<1	23,610,384
Through	527,093,029	195,295,751	<1	<1	722,388,780
Total	744,737,102	232,653,629	19,254,944	4,449,882	1,001,095,556

Source: IHS Global Insights TRANSEARCH, 2011.

Figure 2.5: 2040 Commodity Flow Share by Direction



Source: IHS Global Insights TRANSEARCH, 2011.

In 2040, the through freight between the east and west regions is still the heaviest movement with 224.5 million tons of goods movement. The through freight will likely use the I-20, I-59, and I-10 corridors as the main thoroughfares. The next busiest through flows occur between the north and west regions with 75.4 million tons and will likely use the I-59 or I-55 corridors connecting the north region to the ports in Louisiana. Mississippi also has higher inbound and outbound freight related to the west and east regions than with those to the north region. This flow pattern is similar to that in 2011. **Table 2.6** shows the regional distribution of freight through Mississippi, and **Figure 2.6** shows the OD pattern of the commodity flows.

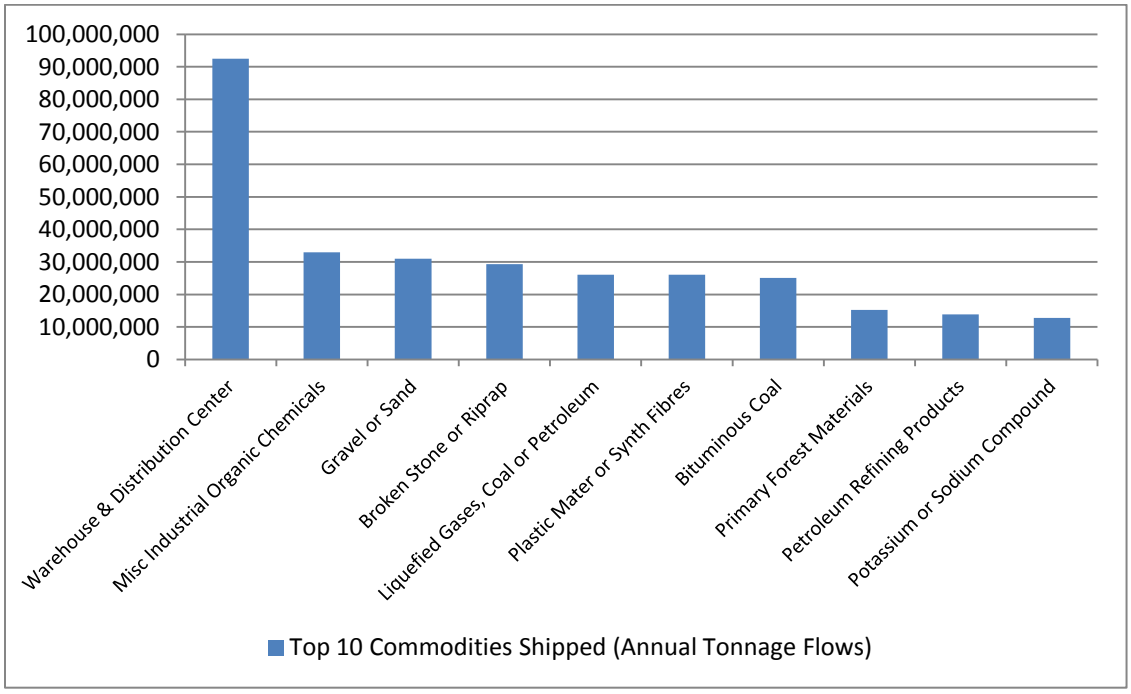
Table 2.6 - 2040 Annual Tonnage (in 000s)

Direction (From/To)	Mississippi	East	West	North	Total
Mississippi	60,486	29,635	40,370	26,595	157,086
East	37,830	105	68,365	12,247	118,547
West	46,829	156,168	13,706	40,452	257,155
North	25,114	29,307	34,954	2,235	91,610
Total	170,259	215,215	157,395	81,528	624,398

Source: IHS Global Insights TRANSEARCH, 2011.

The top shipped commodity in 2040 is the secondary traffic related to warehouse distribution centers, projected to grow more than double to 92 million tons, almost three times the miscellaneous organic chemicals growth ranked second (**Figure 2.6**). This differs from freight tonnage in 2011 when bituminous coal dominates the top commodity category.

Figure 2.6: 2040 Top 10 Commodities Shipped (Annual Tonnage Flows)



Source: IHS Global Insights TRANSEARCH, 2011.

In summary, Mississippi is projected to experience a 1.4 percent annual growth rate in freight tonnage and 2.2 percent in commodity value over the next 30 years, a trend that anticipates higher growth in high value commodities and lower growth in low value commodities. The growth will be significant for both outbound and intrastate commodity movement as shown in **Table 2.7**. This implies that the organic growth of freight from Mississippi will outpace freight flows from outside the state.

Table 2.7 - Freight Growth (2011-2040)

	2011		2040		Avg. Annual Growth Rate	
Direction	**Tons (in 000s)**	**Value (in $000s)**	**Tons (in 000s)**	**Value (in $000s)**	**Tons**	**Value**
Inbound	78,838	73,605,361	109,773	121,854,896	1.1%	1.8%
Outbound	60,452	70,170,042	96,600	133,241,495	1.6%	2.2%
Intrastate	34,156	16,642,891	60,486	23,610,384	2.0%	1.2%
Through	247,421	371,003,495	357,539	722,388,780	1.3%	2.3%
Total	420,868	531,421,789	624,398	1,001,095,556	1.4%	2.2%

Source: IHS Global Insights TRANSEARCH, 2011.

The projected growth differs by mode. **Table 2.8** shows that air freight grows the fastest albeit due to its much lower base. Truck freight grows at an annual rate of 1.7 percent, significantly higher than rail and water each of which also carries significant amounts of freight in Mississippi. At the directional dimension, intrastate movement grows the fastest followed by the outbound and through freight. This distribution of growth is primarily driven by the truck mode as it accounts for more than half of all commodities shipped. Trucks are particularly used by shorter distance freight and for relatively time sensitive commodities. On the other hand, the rail and water modes can only become economical when the shipping distance becomes sufficiently longer and volumes grow significantly larger.

Table 2.8 - Freight Growth by Mode (2011-2040)

Direction	Truck	Rail	Water	Air	Total
Inbound	1.3%	1.2%	0.7%	3.0%	1.1%
Outbound	2.0%	1.6%	0.3%	3.3%	1.6%
Intrastate	2.1%	0.7%	0.4%	<0.1%	2.0%
Through	1.6%	0.8%	<0.1%	<0.1%	1.3%
Total	1.7%	0.9%	0.5%	3.0%	1.4%

Source: IHS Global Insights TRANSEARCH, 2011.

The freight flows summarized above highlight that large amounts of freight are already moving within Mississippi, either produced within the state and moved elsewhere, or brought here for internal consumption from other parts of the nation or the world. In 2011, nearly 80 million tons of freight moved into the state, either to support manufacturing or construction or for public consumption. By 2040, Mississippi's transportation system will be called upon to move more freight, on all modes, both internally and externally, than today. Total US domestic freight is projected to increase from over 420 million tons, with a value of over $531 billion, to over 624 million tons with a value of over $1 trillion. Of

this tonnage, through-movements will continue to claim the largest share; outbound freight will increase more rapidly than inbound freight used for production or consumption; and trucking will be relied upon to carry a greater share of the freight. By 2040, it is expected that the mode share of truck-borne freight will increase from 64 percent to 69 percent. Most of the increase in truck freight will be in outbound trucking, as the mode share increases from 61 percent to 70 percent.

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.

2.4.1 System Structure and Condition

Overall, Mississippi's freight system has been found to function 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 has an Interstate highway network that serves the state well. East-west corridors exist in the south (I-10), middle (I-20), and north (evolving I-22 corridor along 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 varying regions of the state.
- The state's rail system remains viable, and with five Class 1 carriers, provides strong competition and service to all parts of the country. Few states have the luxury of this number of Class 1 railroads. Further, the rail system in most cases is capable of handling the maximum 286,000 lb. loads needed to optimize rail shipments. Based on analysis conducted for the Mississippi Goods Movement and Trade Study, the main lines of each of the Class 1 carriers appear to have adequate capacity to handle any anticipated growth in rail traffic.
- 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. All of these provide access to international markets for both bulk commodities and finished goods.
- 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.

2.4.2 Freight System Challenges

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

Highways

Of all modes providing freight service, highways are the most heavily dependent on public funding. The Mississippi Department of Transportation is responsible for construction and maintenance of the primary network of highways, while counties and municipalities are often responsible for the secondary network that is critical for the first and last mile of the freight trip. The focus of the MSFP is on the primary network, with one special concern: the condition of bridges on the secondary network that can have a large adverse impact on operations of businesses that are located in the state's more rural areas.

Higher truck traffic has implications on highway maintenance, congestion, and highway financing. Adequately maintaining the conditions of Mississippi's highways and bridges critical to freight movements has already been challenging given the challenging financing realities. For the primary highway network, challenges are focused in the three areas described below.

Highway Capacity and Bottlenecks

Highway congestion and its impacts, in terms of travel delay, uncertainty, and safety, can have severe effects on businesses; in addition, increasing truck traffic often has wide-ranging impacts on the general public. Increases in general congestion cause delays in delivery of freight and increased operating costs due to extended hours of operation. And in heavily traveled truck corridors, the sheer number of trucks can greatly diminish available highway capacity and add to delay related to congestion.

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 deterioration of primary corridors with increasing congestion 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.

Densities of truck traffic on major Mississippi highways are compared to general traffic density, the measure used to denote congestion in this study, to identify corridors expected to experience significant congestion without major improvements. As improvement strategies for the key freight corridors are examined later in the MSFP study, the truck composition in these corridors will be carefully considered, to determine whether improvement strategies specifically oriented to truck traffic would be feasible.

A second element of congestion has to do with whether there are localized bottlenecks that are restricting the flow of freight. These might include heavily congested or poorly designed intersections or interchanges, roadways with narrow horizontal or vertical clearance, narrow roadways providing the "last mile" of access to a freight generating site, or heavily congested rail yards. 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.

In addition to the FHWA/ATRI analysis, stakeholders to the MSFP study identified several dozen local bottlenecks that could be considered in the evaluation of improvement strategies. The identified bottlenecks and other congested locations as identified by study stakeholders are shown in **Figure 2.7**.

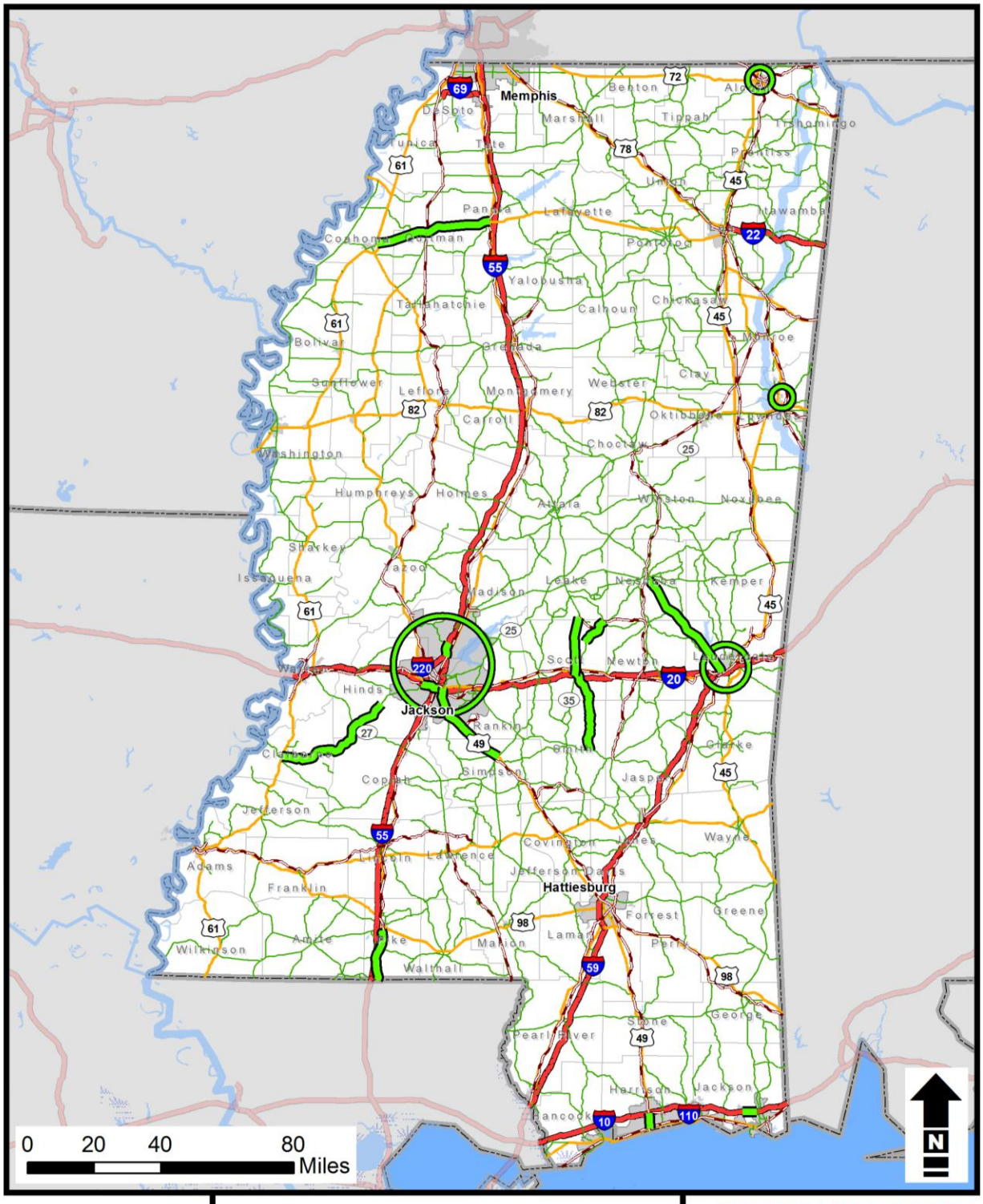
Pavement Condition

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. This situation is facing nearly every state, as the buying power of the motor fuels taxes and other fees continue to degrade, and in the case of pavement, the per mile cost to maintain pavement increases with each year of deferred maintenance. 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. Of primary concern to these interests are the high number of low weight posted bridges and one lane bridges across the state, many located in areas critical to freight movement. Rerouted shipments due to these restrictions results in increased cost for shippers, receivers, and carriers. Bridge weight limits can result in circuitous detours for heavy trucks, impacting both trucking productivity and the secondary and local road networks that become alternative routes. These route restrictions can also limit access to current and future industrial and agricultural sites and intermodal terminals.



MISSISSIPPI STATEWIDE FREIGHT PLAN

MDOT MISSISSIPPI DEPARTMENT OF TRANSPORTATION

LEGEND

- Highway Bottlenecks
- Congested Areas
- Interstate
- US Highway
- MS Highway
- Class I Railroad
- River

Source: ESRI, MDOT.

FREIGHT USER SURVEY HIGHWAY BOTTLENECKS AND CONGESTED AREAS

FIGURE 2.7

Railroads

The state's railroads companies, with responsibility for operating and maintaining the rail network, are likely to continue to face their historical challenge in raising the capital funding needed to provide efficient operations. Predicted reduction in mode share is likely to exacerbate that challenge, particularly if reductions in coal movement are experienced. Nationally, evidence is growing that as the economy recovers and rail freight increases, railroads are experiencing challenges in processing freight through major hubs.

With the recent joint investment by the Mississippi State Ports Authority and KCS in upgrading the KCS line connecting Jackson, Hattiesburg, and Gulfport, that line will be able to handle the standard 286,000-pound cars and double-stack trains. This was the only extended deficiency that had been noted. One bottleneck that was identified in the Mississippi Goods Movement and Trade Study (MGM&TS) was yard capacity at the KCS yard in Jackson, although this is not a concern that has been voiced by stakeholders through either the Freight Advisory Committee (FAC) or the stakeholder surveys.

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; this challenge is being faced by every Gulf and Atlantic seaboard port and represents perhaps the greatest strategic planning exercise that the US eastern maritime industry has faced.
- Preserving adequate channel depth in the face of changing water levels; in the face of dwindling federal resources for dredging and the impact of continuing low water levels, this poses a particularly significant challenge for Mississippi River ports.
- Improving the "last mile" access to port facilities for trucks and railroads. Freight movement by water is by definition intermodal; very few freight shippers or receivers load directly onto or off of waterborne craft. For this reason, efficient access to the ports, particularly in areas where population growth and accompanying congestion cause problems for truck access, will be a relatively isolated but significant challenge.

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

Airports

As with ports and waterways, 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.

2.4.3 Freight Natural Resource Extraction Challenges

The USDOT requires that state freight plans consider the impact of transporting natural resources on the state's highway system. In the case of routes on which travel by heavy vehicles (including mining,

agricultural, energy cargo or equipment, and timber vehicles) is projected to substantially deteriorate the condition of roadways, a description of improvements that may be required to reduce or impede the deterioration can be made.

While coal, oil, and gas production are small compared to many other states, there nevertheless is extraction of each of these resources. **Table 2.9** lists the state's primary natural resource production commodities, by 2-digit STCC, and the counties with the highest tonnage production of each commodity groups. Non-metallic minerals (sand and gravel, primarily) dominate, with most being transported by truck. Mississippi produced 2.8 million tons of coal in 2008, ranking it 19th in the nation in production (0.24 percent of national production). All production was from the Red Hills mine in Choctaw County, the only coal mine in Mississippi for more than a decade. Unlike national patterns, the coal mined in Mississippi is reported to move by truck for the short distance between mine and the power plant in which it is used. At the current time, there is no evidence that Mississippi highways are receiving unusual wear and tear as a result of trucking activity in the resource extraction areas. The forestry and poultry industries have expressed concern about posted bridges, but these seem to be focused on the secondary road network.

Table 2.9: Mississippi Primary Natural Resource Production						
Statewide Originating Tons (2011)						
STCC2	**Commodity**	**Truck**	**Rail**	**Water**	**Air**	**Total**
10	Metallic Ores	14	501,628	51,288	-	552,930
11	Coal	2,701,242		1	-	2,701,243
13	Crude Petrol. or Natural Gas	-	-	181,730	-	181,730
14	Nonmetallic Minerals	17,958,114	261,956	270,038	5	18,490,113
Total		**20,659,370**	**763,584**	**503,058**	**5**	**21,926,017**
	County	**Truck**	**Rail**	**Water**		**Total**
10	**Metallic Ores**					
	Monroe	-	289,268	6,587	-	295,855
	Harrison	14	212,360	4,771	-	217,145
	Lowndes	-	-	15,535	-	15,535
	Tishomingo	-	-	15,535	-	15,535
	Itawamba	-	-	5,571	-	5,571
	Other Counties	-	-	3,290	-	3,290
	Total	**14**	**501,628**	**51,288**		**552,930**
11	**Coal**					
	Choctaw	2,701,242	-		-	2,701,242
	Harrison		-	1	-	1
	Total	**2,701,242**		**1**		**2,701,243**
13	**Crude Petrol. or Natural Gas**					
	Issaquena	-	-	181,730	-	181,730
	Total			**181,730**		**181,730**
14	**Nonmetallic Minerals**					
	Copiah	4,039,087	16	-	-	4,039,103
	Yazoo	2,657,594	10	-	-	2,657,604
	Clarke	1,501,127	7	-	-	1,501,134
	Carroll	1,434,297	-	-	-	1,434,297
	Jackson	954,131	43,384	194,604	-	1,192,119
	Other Counties	7,371,879	218,539	75,434	5	7,665,856
	Total	**17,958,114**	**261,956**	**270,038**	**5**	**18,490,113**

Source: IHS Global Insights TRANSEARCH, 2011.

3 Mississippi Freight Network

A key element in development of the Mississippi Statewide Freight Plan is identification of key freight corridors in the state, in terms of their movement of freight within and through the state, and the access that they provide to both internal and external markets and to major freight shippers. Identification of a network of important freight corridors will 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 those intermodal facilities, associated intermodal distribution and warehousing facilities, and the state's major freight generators.

This section of the report defines the process by which the proposed Mississippi Freight Network was developed and describes the key elements of the network, the primary facilities and the role they play in movement of state and national freight and finished products.

3.1 Mississippi 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 consists of the following steps, and is shown graphically in the figure below.

The first step in defining the MFN is identification of a set of corridor identification criteria. Responsive to the freight goals and objectives shown above, the MFN criteria, shown in **Table 3.1** below, establish stratified criteria for two levels, or tiers, of freight facilities in terms of:

- providing interstate connectivity
- providing access to key intermodal freight facilities and freight generators
- efficiently moving high volumes of freight to support the state's economic health

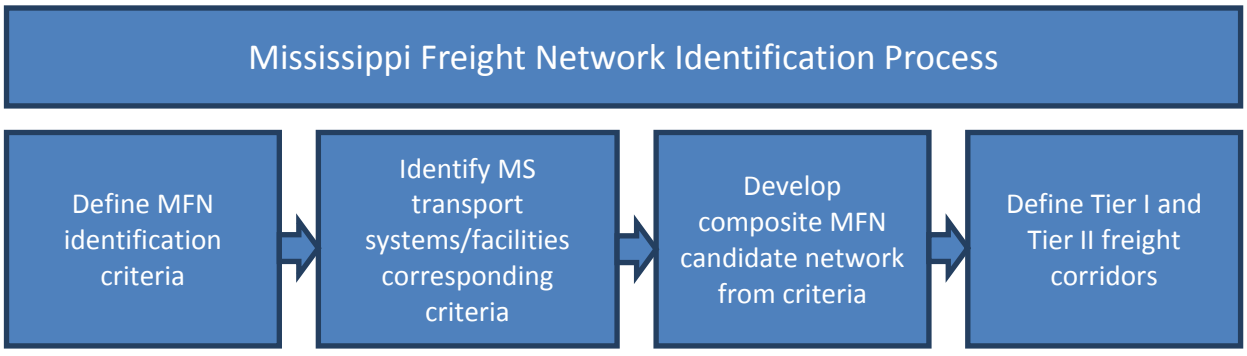


Table 3.1: Mississippi Freight Network Identification Criteria		
Criteria Type	**Tier I** **Primary/Interstate Freight Corridors**	**Tier II** **Regional/Rural Freight Corridors**
1. Network connectivity to national systems	a. Highway that is part of the national Primary Freight Network (1) b. Highway that is part of Interstate Highway System c. Class 1 RR mainlines d. Mississippi River	Not applicable: network connectivity considered to apply only to Tier I Corridors.
2. Access to intermodal facilities and major freight generators	a. Primary highway or rail line serving major intermodal facilities (ports > 1M tons per year or identified major cargo airport); associated facility and its first/last mile intermodal connector become part of the MFN Tier I.	a. Primary highway or rail line serving secondary intermodal facilities (ports with 0.5M-1M tons per year); the associated facility and its first/last mile intermodal connector become part of the MFN Tier II.
	b. Primary highway (including first/last mile connector) or rail line(s) serving statewide freight generators (>2M tons and/or >$1B in value of generated freight annually). (2)	b. Primary highway (including first/last mile connector) or rail line(s) serving regional freight generators (1M-2M tons and/or $0.5B-$1B in value of generated freight annually).
	c. Highway or rail line providing access to top statewide freight counties (generating >5M tons of freight annually).	c. Highway or rail line providing access to regional freight counties (generating 2M-5M tons of freight annually).
3. Mobility of freight flows: volume and density	a. Highways carrying >10M tons of freight annually on 50% of component length.	a. Highways carrying 1.5M-10M tons of freight annually on 25% of component length.
	b. Freight rail lines carrying >12M tons of freight annually on 50% of component length.	b. Freight rail lines carrying 3M-12M tons of freight annually on 25% of component length.
	c. Highways with average of >4.5k daily trucks on 50% of component length.	c. Highways with average of 2.5k-4.5k daily trucks on 25% of component length.
	d. Mississippi River and its major ports.	d. Tennessee/Tombigbee Waterway and its ports.

(1) The national Primary Freight Network (PFN) is currently in development by USDOT. There are two draft PFNs published by USDOT. The "Highway PFN" is a route mileage constrained network totaling 27K miles nationally, the statutory ceiling. The "Comprehensive Highway PFN" is not route mileage constrained and totals 41K route miles nationally.

(2) Major freight generators include: manufacturing; energy (oil, gas, and mining); processed agriculture; distribution centers and Warehousing.

The next step in MFN development was identification and mapping of Mississippi transportation systems and facilities corresponding to each of the identifying MFN criteria. A map set corresponding to MFN identification criteria listed above is provided in **Appendix B**.

Key aspects in applying the designated criteria included the following considerations:

- Providing interstate connectivity: it seems critical that the MFN would be consistent with elements of the primary national freight system, to provide efficient linkage to national markets for Mississippi products and to key supply sources to support Mississippi manufacturing and cost-effective consumption. For interstate connectivity, the focus is on highway and rail system elements that are critical elements of the national transportation network. These include Mississippi highways that are part of the evolving national Primary Freight Network (in development by FHWA), the Interstate highway system (both existing and approved future segments), Class 1 railroad mainlines, and the Mississippi River.

- Providing access to key intermodal freight facilities and freight generators: building on interstate connectivity, the MFN should provide efficient access to intermodal facilities such as rail intermodal yards, river or gulf ports, and commercial airports, and to the state's larger freight generators, in terms of either tonnage or high total freight value. In considering this element, the network would include the first/last mile element of the trip, from the primary facility, such as the interstate highway, and the freight generating facility, such as the port or major shipper.
- Efficiently moving high volumes of freight to support the state's economic health: at its root, the key for the MFN is to move Mississippi's highest volumes and value of freight safely, efficiently, and reliably into and within the state, and over that "first/last mile" to the producers of the freight movement. Those can be as varied as mineral extraction and natural resource producing locations, major manufacturing locations, key ports, or critical warehousing and storage centers. Transportation elements reflecting this measure are the highest volume freight facilities in terms of truck and rail volumes.

3.2 Mississippi Freight Network Identification and Descriptions

Based on the application of the identification process described in the previous section, a 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 3.1** and summarized in **Table 3.2**. The extent to which each proposed corridor satisfies the identification criteria is shown in **Table 3.3.**

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; in the case of the CN main line between Memphis and Jackson, that line is about 20 miles to the west of I-55, but it is still considered to be serving similar freight markets.
- Each Tier II corridor features a primary highway, either a US or Mississippi state route, but not all corridors have parallel rail lines.
- Each corridor features some combination of intermodal facilities (ports, airports, or rail) that are served by either highway/roadway or rail line, or both, and at least one principal connector to that facility. In many cases, these connectors have been integrated into the National Highway System as NHS Connectors.

A brief description of each of the MFN Tier I and Tier II corridors follows. In addition to these corridor descriptions, more detailed comparative summaries of the MFN corridors, called Corridor Assessments, can be found in **Appendix C**. These provide more detailed information to support further planning of individual corridors. The assessments include the following information:

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

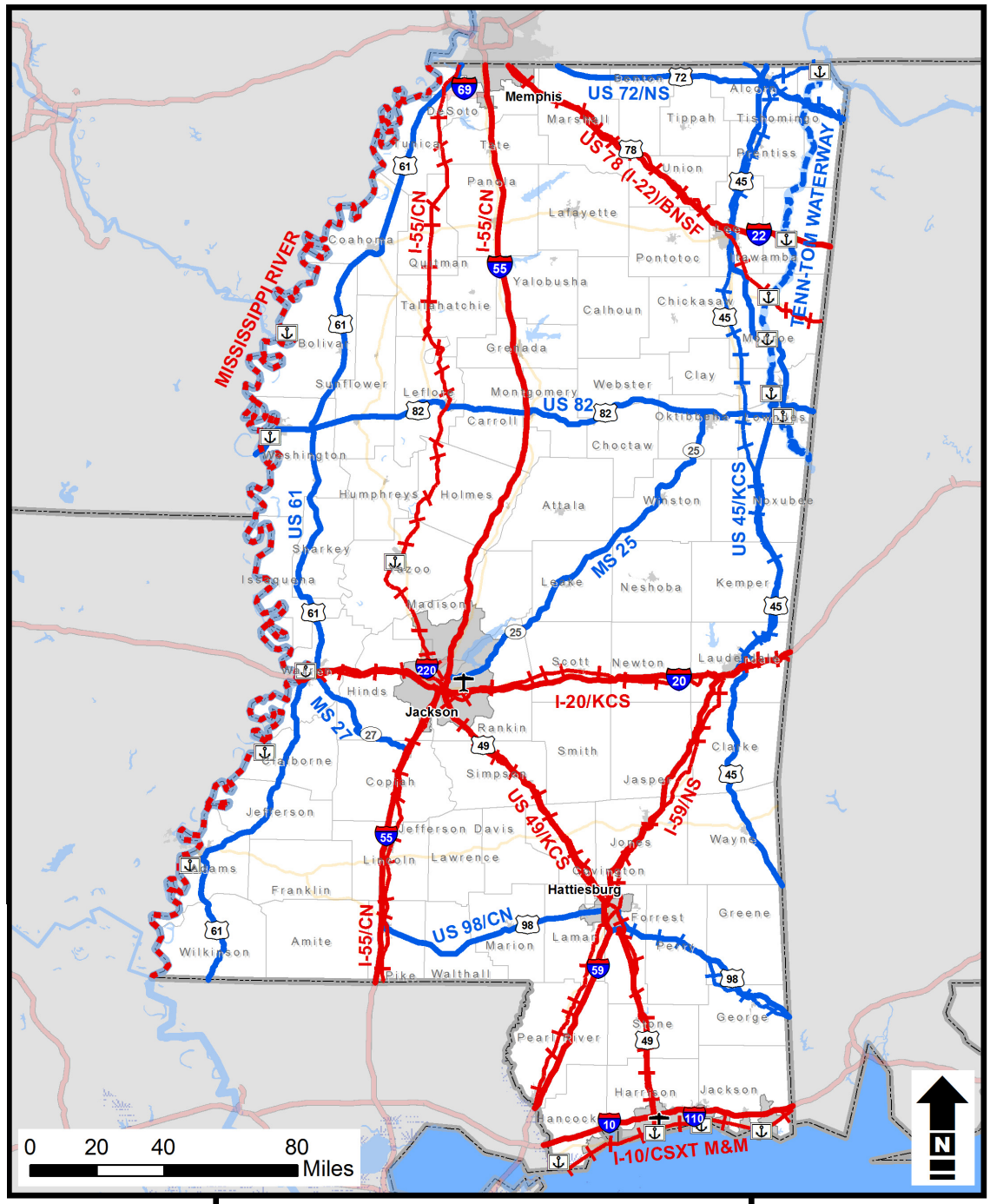

Memphis
Jackson
Hattiesburg
US 72/NS
US 78 (I-22)/BNSF
TENN-TOM WATERWAY
MISSISSIPPI RIVER
I-55/CN
US 82
US 61
MS 25
US 45/KCS
I-20/KCS
MS 27
US 49/KCS
I-59/NS
US 98/CN
I-10/CSXT M&M
0 20 40 80 Miles
N
MISSISSIPPI STATEWIDE FREIGHT PLAN
MDOT
LEGEND
Tier I Highway
Tier I Railway
Tier I Water
Tier II Highway
Tier II Railway
Tier II Water
Other Interstates
US I highway
Airport
Port
Source: ESRI, MDOT.
MISSISSIPPI FREIGHT NETWORK CORRIDORS
FIGURE 3.1

Table 3.2: Mississippi Freight Network Corridors			
Corridor	**Limits**	**Primary Facilities/Operators**	**Key Corridor Features**
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	Corridor provides freight mobility and access to critical state industries along the Gulf Coast. Freight flows along this corridor reflect those industry segments, especially chemicals petroleum, coal, and crude oil. The corridor serves two deep water Gulf Coast ports, Pascagoula and Gulfport. I-10 congestion, already an issue today, is projected to become acute by 2040, with unacceptable LOS and delay along the entire corridor.
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	Corridor is a significant national and regional freight link for both through and regional freight, with freight destined for Jackson area and Meridian, and through freight to northeast U.S. and to Texas, New Orleans, and beyond. Of all MFN corridors, this corridor is projected to experience largest percentage increase in annual freight flows.
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	Corridor's extensive connectivity makes it a significant national link for through freight, with connections between Memphis, Jackson, to New Orleans. It is the most heavily traveled freight corridor in Mississippi.
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	Corridor is a significant national freight link for through freight, with freight destined for New Orleans and states northeast of Mississippi. Through freight accounts for 75% of total corridor freight, highest share of all MFN corridors.
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.	Corridor is a significant statewide freight link with freight destined for Jackson area from the Gulf Coast and vice-versa. Freight flows along this corridor reflect outputs by major freight generators in the region, including chemicals/petroleum, coal, and crude oil.
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	Corridor is an important regional freight link from Memphis, a major national freight hub, to northeastern MS, including Tupelo, and to Alabama. Upgrading entire length of US 78 to interstate standards will improve corridor operations in the future.

Table 3.2: Mississippi Freight Network Corridors			
Corridor	**Limits**	**Primary Facilities/Operators**	**Key Corridor Features**
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.	Waterborne freight movement along Mississippi River and six ports located within state provide Mississippi with access to one of the most affordable, safe, and high volume form of freight transportation. All are important to state's economy but beyond Mississippi, they provide feeder service for international and domestic shipments. Top commodity along the Mississippi River, agriculture, differs from other Tier 1 corridors, but petroleum products are largest commodity group handled by Mississippi's ports.
Tier II Corridors			
MS 25 (Jackson-Louisville-Starkville)	Jackson in Hinds County to Starkville in Oktibbeha County	MS 25	Corridor serves variety of freight intensive locations, including the Jackson area, Jackson International Airport, and rural agriculture and tobacco producers along the corridor. It provides regional connection between Jackson and Starkville/Columbus area northeast of Jackson. Major interchanges with key statewide facilities such as I-55 in Jackson and US 82 in Starkville provide access to other long distance freight corridors in the state.
MS 27 (Vicksburg-Utica-Crystal Springs)	Vicksburg in Warren County to Crystal Springs in Copiah County	MS 27	Shortest MFN corridor is a significant regional link for trucks bypassing Jackson, allowing for a short-cut between I-20 and I-55, and also for accessing major freight activity centers near junction of MS 27 and I-55. Corridor's pavement condition is currently assessed as the worst of all Tier II corridors in terms of IRI pavement score.
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	The corridor is a significant regional freight link providing access to major freight generators and emerging manufacturing activity centers in the area. US 45 provides access to I-20, I-22/US 78, US 82, and US 72, while Class I railroads (KCS and BNSF) serve several of the Tenn-Tom Waterway System ports.
US 61 (Southaven-Vicksburg-Woodville)	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	Longest MFN corridor provides access to major freight generators along the corridor, and five Mississippi River ports in the state. US 61 corridor has the largest percentage of waterborne freight flows of all highway-based Tier II corridors. Upon completion of I-69, US 61 will gain in significance as a major access link to Memphis via I-69.
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	Corridor functions well as a significant regional freight link providing access to Memphis and points in northeast Mississippi and a relief/alternate route to the US 78/I-22 corridor.

Table 3.2: Mississippi Freight Network Corridors			
Corridor	**Limits**	**Primary Facilities/Operators**	**Key Corridor Features**
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	This corridor provides freight mobility and access to a variety of freight intensive users and areas, including regional freight activity centers (manufacturing: Columbus; rail/highway intermodal terminal: Greenwood (CN/truck); major interchanges with key statewide facilities (e.g., I-55 in Winona), major inland ports (Port of Greenville, and Lowndes County Port) and coal mining areas.
US 98/CN (McComb-Hattiesburg-Lucedale)	McComb in Pike County to AL State Line in George County	US 98, CN mainline	The corridor provides regional connections to freight activity centers between I-55, Hattiesburg, and points along US 98 to Alabama and further south to Mobile, Alabama. Major US 98 interchanges with I-55, I-59 and US 49 allow for quick interstate access.
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.	Tennessee-Tombigbee Waterway, a designated national marine highway, runs north-south through eastern portion of Mississippi and connects Tombigbee River with Tennessee River, creating a water transportation route that serves 23 states from Gulf of Mexico (Port of Mobile) northward. Six Mississippi ports on the Tenn-Tom carried 2 million tons of goods with lumber as the primary commodity, followed by coal and crude oil. The importance of the Tenn-Tom ports is highlighted by the fact that all but one of them is served by NHS Intermodal Connectors.

Table 3.3: Mississippi Freight Network Criteria Attainment

MFN CORRIDOR GOAL ACHIEVEMENT		1. Network Connectivity Providing connectivity to national systems	2. Access Providing access to intermodal facilities and major freight generators	3. Mobility Efficiently moving high volumes of freight to support the state's economic health
	Tier I Criteria	a. Highway that is part of the national Primary Freight Network b. Highway that is part of Interstate Highway System c. Class 1 RR mainlines d. Mississippi River	Primary highway, rail line, or waterway providing access to: a. Major intermodal facilities (Ports > 1M tons per year or identified major cargo airport) b. Statewide freight generators (>2M tons and/or >$1B in value of generated freight annually) c. Top statewide freight counties (generating >5M tons of freight annually).	a. Highways carrying >10M tons of freight annually on 50% of component length. b. Freight rail lines carrying >12M tons of freight annually on 50% of component length. c. Highways with average of >4.5k daily trucks on 50% of component length. d. Mississippi River and its major ports.
	Tier II Criteria	Not applicable: Network Connectivity considered to apply only to Tier I Corridors.	Primary highway, rail line, or waterway providing access to: a. Secondary intermodal facilities (ports with 500k-1M tons per year) b. Regional freight generators (1M-2M tons and/or $0.5B-$1B in value of generated freight annually) c. Regional freight counties (generating 2M-5M tons of freight annually).	a. Highways carrying 1.5M-10M tons of freight annually on 25% of component length. b. Freight rail lines carrying 3M-12M tons of freight annually on 25% of component length. c. Highways with average of 2.5k-4.5k daily trucks on 25% of component length. d. Tennessee/Tombigbee Waterway and its ports

ID	Name	Connectivity				Access			Mobility			
Tier I Corridors		a	b	c	d	a	b	c	a	b	c	d
1	I-10/CSXT (Gulf Coast)	X	X	X		X	X	X	X	X	X	
2	I-20/KCS (Vicksburg-Jackson-Meridian)	X	X	X	X	X	X	X	X		X	
3	I-55/CN (Southaven-Jackson-McComb)		X	X		X	X	X	X	X	X	
4	I-59/NS (Picayune-Hattiesburg-Meridian)		X	X			X		X			
5	US 49/CN/KCS (Jackson-Hattiesburg-Gulfport)			X		X	X	X	X			
6	US 78 (I-22)/BNSF (Olive Branch-Tupelo-Fulton)		X	X			X		X	X	X	
7	Mississippi River (Port of Rosedale-Port of Natchez)				X	X	X	X				X
Tier II Corridors		N/A				a	b	c	a	b	c	d
1	MS 25 (Jackson-Louisville-Starkville)	Connectivity criteria not applicable to Tier II Corridors.					X	X	X			
2	MS 27 (Vicksburg-Utica-Crystal Springs)					X	X	X	X			
3	US 45/KCS (Corinth-Meridian-Waynesboro)					X	X	X	X			
4	US 61 (Southaven-Vicksburg-Natchez)					X	X	X	X			
5	US 72/NS (Mt. Pleasant-Corinth-Iuka)					X		X	X		X	
6	US 82 (Greenville-Winona-Columbus)					X	X	X	X			
7	US 98/CN (McComb-Hattiesburg-Lucedale)						X	X	X	X		
8	Tennessee-Tombigbee Waterway (Yellow Creek Port-Lowndes County Port)					X	X	X				X

3.2.1 Tier I Corridors

I-10/CSXT (Gulf Coast) Corridor

The 78 mile I-10/CSXT Gulf Coast Corridor traverses southern Mississippi, including two of the five most populated counties in the state, Harrison and Jackson. The three counties in the corridor account for 13% of population and employment in the state. The five leading employment sectors in the corridor include government, food services, retail trade, manufacturing, and construction. Northrop Grumman Ship Systems, the state's largest employer with over 13,000 employees, is located in this corridor. The corridor serves three major Gulf Coast ports, including two deep water ports, Pascagoula and Gulfport. Truck freight is the dominant mode in the corridor and is expected to grow from 61% of total freight in 2011 to 65% in 2040. The major intersecting highways are US 49 in Gulfport (connection to Jackson-Hattiesburg-Gulfport Corridor) and MS 63 in Pascagoula. The major rail mainline is the CSXT M&M subdivision, parallel to I-10.

Key features of this corridor include:

- primary commodities (based on tonnage) shipped through this corridor: chemical petroleum products, coal minerals, crude oil
- top statewide freight counties served (shown on Figure 5 for this corridor and all corridors below): Jackson, Harrison
- critical connectors to major generators or intermodal elements:
  - highways: I-110, US 49, MS 63, MS 57, MS 609/Tucker Road, and Kiln Delisle Road (Pass Christian)
  - rail: CSXT connection to Chevron Pascagoula Refinery and Mississippi Phosphates; KCS branch to DuPont and Bayou Concrete Plant; Mississippi Export Railroad (MSE); and Port Bienville Railroad (PBVR)
  - ports and waterways: NHS Intermodal Connectors to Port of Gulfport and Port of Pascagoula
  - commercial airports: NHS Intermodal Connector to Gulfport-Biloxi International Airport

I-20/KCS (Vicksburg-Jackson-Meridian) Corridor

The 155 mile I-20/KCS (Vicksburg-Jackson-Meridian) Corridor runs east-west along I-20. Among the Tier I Corridors, the highest growth in moved freight tonnage between 2011 and 2040 is expected along the I-20/KCS Corridor. The corridor spans six counties in Mississippi between the Louisiana border near Vicksburg and Alabama and includes two of the top five most populated counties in the state, Hinds and Rankin. The six counties accounted for 19% of the total state population and 23% of total employment in 2013. Truck and rail freight dominate the total corridor freight tonnage. Truck mode is expected to grow from 47% in 2011 to 52% in 2040. The primary east-west highways within the corridor are I-20 and US 80. The corridor includes the KCS rail line running parallel to I-20, the Meridian Speedway. The Port of Vicksburg is the corridor's primary river port, located at the confluence of the Mississippi and Yazoo rivers. Jackson-Evers International Airport is the commercial airport serving the Vicksburg-Meridian corridor.

Key features of this corridor include:

- primary commodities shipped through the corridor: chemical petroleum products, coal minerals, crude oil
- top statewide freight counties served: Hinds, Warren, Rankin
- critical connectors to major generators or intermodal elements:
  - highways: I-220, US 51, MS 27 (also a Tier II Corridor)
  - rail: Mississippi Southern Railroad (MSR), Meridian and Bigbee Railroad (MNBR), and Vicksburg Southern Railroad (VSOR)
  - ports and waterways: NHS Intermodal Connector to Port of Vicksburg
  - commercial airports: NHS Intermodal Connector to Jackson International Airport

I-55/CN Corridor (Southaven-Jackson-McComb)

The 290 mile I-55/CN Corridor spans 19 counties from Tennessee state line in DeSoto County to the Louisiana state line in Pike County and includes Jackson, Mississippi's largest city and capital. One-third of Mississippi's population and available jobs are located within this corridor, particularly Hinds, DeSoto, Madison, and Rankin counties that account for 66% of the population within the corridor and 73% of its employment force. The I-55/CN Corridor is the most heavily traveled freight corridor in Mississippi, with 139 million tons moved by truck or rail through the counties comprising the corridor in 2011. Truck is the dominant freight mode in the corridor and is expected to grow from 58% share in 2011 to 65% in 2040. The rail share is expected to decline from 42% to 35%. The corridor's major freight network elements include: Interstate 55 and US 49; the CN rail line; the Jackson and Memphis International Airports; and the Yazoo County Port served by CN rail line.

Key features of this corridor include:

- primary commodities shipped through the corridor: coal minerals, crude oil, chemical petroleum products
- top statewide freight counties served: Hinds, Copiah, Rankin, Yazoo
- critical connectors to major generators or intermodal elements:
  - highways: I-69, I-220, US 278/MS 6, MS 27 (also Tier II Corridor), MS 28, MS 7, MS 315, and Paper Mill Road (Grenada)
  - rail: NHS Intermodal Connectors to IC Railroad in Jackson, the Grenada Railway, LLC (GRYR), CN Class I line from Jackson to Canton
  - ports and waterways: NHS Intermodal Connector to Port of Yazoo

I-59/NS (Picayune-Hattiesburg-Meridian) Corridor

The 170 mile I-59/NS (Picayune-Hattiesburg-Meridian) Corridor spans seven Mississippi counties including the cities of Hattiesburg and Meridian, the state's third and sixth largest city, respectively. In 2013, an estimated 13% of the state's total population resided within the corridor, compared to 12% of the total statewide employment. Through freight accounts for 75% of the total corridor freight, the highest share among all the corridors. Truck is the dominant mode with 75% of the total corridor freight tonnage, with the rest handled by rail. The primary highways running through the Picayune-Meridian corridor are I-59 and US 11. Major rail lines serving the corridor include the NS mainline, which parallels

I-59 and has major interchanges with the CN at Hattiesburg and with KCS in Meridian, where it interchanges with the Meridian Speedway.

Key features of this corridor include:

- primary commodities shipped through the corridor: chemical petroleum products, coal minerals, crude oil
- top statewide freight counties served: none
- critical connectors to major generators or intermodal elements:
  - highways: MS 43
  - rail: Meridian Southern Railway (MDS)

US 49/CN/KCS (Jackson-Hattiesburg-Gulfport) Corridor

The 154 mile US 49/CN/KCS (Jackson-Hattiesburg-Gulfport) Corridor runs through central Mississippi, between Jackson and Gulfport, and includes Hattiesburg. The nine counties within the corridor account for 18% of both the total population and statewide employment. Rail is the dominant mode in this corridor and accounts for over 50% of total freight tonnage, followed by truck with 42%. The corridor includes the CN rail line running long US 49 between Jackson and Hattiesburg (it continues along US 98 from Hattiesburg to the Alabama border). The KCS line runs between Hattiesburg and Gulfport along US 49. The Jackson-Evers International Airport provides freight aviation services while the Port of Gulfport is the deep water port serving the corridor.

Key features of this corridor include:

- primary commodities shipped through the corridor: chemical petroleum products, coal, crude oil
- top statewide freight counties served: Harrison, Rankin
- critical connectors to major generators or intermodal elements:
  - rail: KCS branch to DuPont and Bayou Concrete Plant
  - ports and waterways: NHS Intermodal Connectors to Port of Gulfport
  - commercial airports: NHS Intermodal Connector to Gulfport-Biloxi International Airport

US 78 (I-22)/BNSF (Olive Branch-Tupelo-Fulton) Corridor

The 118 mile US 78 (I-22)/BNSF (Olive Branch-Tupelo-Fulton) Corridor runs from Olive Branch to the Alabama border along US 78 (I-22) and the BNSF rail line, passing through eight counties in northern Mississippi. These counties account for 14% of total population and 13% of total employment across the state. Rail freight was the dominant mode in 2011, accounting for 66% of the total corridor freight. However, truck freight is expected to grow its modal share from 33% in 2011 to 51% in 2040. Key transportation infrastructure in this corridor includes I-22 and US 78. The corridor runs parallel to BNSF main line that connects to the KCS in Tupelo and CN in Memphis.

Key features of this corridor include:

- primary commodities shipped through the corridor: coal minerals, crude oil, chemical petroleum products

- top statewide freight counties served: Monroe
- critical connectors to major generators or intermodal elements:
  - highways: US 278, MS 15, MS 302
  - rail: Mississippi Central Railroad Company (MSCI); Mississippi Tennessee Railroad (MTNR); R.J. Corman-Tennessee Terminal (RJCK); the Mississippian Railway Cooperative (MSRW)
  - ports and waterways: NHS Intermodal Connectors to Port of Itawamba and Port of Amory

Mississippi River (Port of Rosedale-Port of Natchez)

Mississippi has five public ports immediately adjacent to the Mississippi River (Port of Greenville, Port of Natchez, Port of Rosedale, Port of Vicksburg, and Port of Claiborne County and one accessed from the Mississippi River via the Yazoo River (Port of Yazoo). All are important to the state's economy (although Port of Claiborne County currently does not process any cargo). Inland ports help keep freight movement rates for other modes competitive. Beyond Mississippi, inland ports provide feeder service for international and domestic shipments. Nearly 9 million tons of freight flowed through the Mississippi River between Port of Rosedale to Port of Natchez in 2011, of which 4 million tons originated or terminated in one of the six Mississippi ports.

Key features of this corridor include:

- primary commodities shipped through the corridor: agriculture, chemical petroleum products, coal minerals
- top statewide freight counties served: Warren, Washington
- critical connectors to major generators or intermodal elements:
  - NHS Intermodal Connectors providing last mile access to Port of Greenville, Port of Rosedale, Port of Vicksburg, and Port of Yazoo.
  - The four major Mississippi River bridge crossings and ITS monitoring: I-20 bridge at Vicksburg, Mississippi; US 84 bridge at Natchez, Mississippi; US 82 bridge at Greenville, Mississippi; and US 49 bridge at Iuka, Mississippi; all include surveillance cameras, traffic volumes/speeds on approaches, real time river current data sensors, Dynamic Message Signs, and detour monitoring.
  - Rail: last mile access to Port of Greenville - Columbus and Greenville Railway (CAGY); Port of Rosedale - Great River Railroad (GTR); Port of Vicksburg - Vicksburg Southern Railroad (VSOR); Port of Natchez - Natchez Railway, LLC (NTZR); and CN mainline to Port of Yazoo.

3.2.2 Tier II Corridors

MS 25 (Jackson-Louisville-Starkville) Corridor

The 124 mile MS 25 (Jackson-Louisville-Starkville) Corridor runs northeast from Jackson to Starkville. Truck freight was the dominant mode in 2011, accounting for 51% of the total corridor freight by tonnage. Truck is also the dominant mode in the corridor by the value of moved freight. Truck freight is expected to grow its modal share from 51% in 2011 to 57% in 2040. Key transportation infrastructure in this corridor includes MS 25 and Jackson International Airport. While there are no mainline rail tracks

parallel to MS 25, the KCS mainline from Starkville to Newton provides access to multiple towns along the MS 25 Corridor.

Key features of this corridor include:

- primary commodities shipped through the corridor: chemicals petroleum products, coal minerals, crude oil
- top statewide freight counties served: Rankin
- critical connectors to major generators or intermodal elements include:
  - highways: MS 35, MS 475

MS 27 (Vicksburg-Utica-Crystal Springs) Corridor

The 41 mile MS 27 (Vicksburg-Utica-Crystal Springs) Corridor runs southeast from Vicksburg via Utica to Crystal Springs. Nearby rail freight was the dominant mode in 2011, accounting for 73% of the total corridor freight by tonnage. Truck freight is expected to grow its modal share from 21% in 2011 to 26% in 2040. MS 27 connects regional freight flows between I-20 and I-55 and allows trucks to bypass Jackson when traveling long-distance. MS 27 also provides access to some of the largest freight generators by tonnage in the state near the I-55/MS 27 interchange in Copiah County. Key transportation infrastructure in this corridor includes MS 27. Although there are no mainline rail tracks parallel to MS 27, both the KCS mainline flows (running parallel to I-20) and CN mainline flows (parallel to I-55) are captured as part of this corridor's overall flows due to their proximity and data reporting by TRANSEARCH.

Key features of this corridor include:

- primary commodities shipped through the corridor: coal minerals, crude oil, chemicals petroleum products
- top statewide freight counties served: Hinds, Warren, Copiah
- critical connectors to major generators or intermodal elements:
  - MS 18.

US 45/KCS (Corinth-Meridian-Waynesboro) Corridor

The 266 mile US 45/KCS (Corinth-Meridian-Waynesboro) Corridor runs north-south through the eastern portion of the state along US 45 and the KCS rail line, and parallel to the Tennessee-Tombigbee Waterway, a designated national marine highway. Rail freight was the dominant mode in 2011, accounting for 77% of the total corridor freight by tonnage. Rail is also the dominant mode in the corridor by value. Truck freight is expected to grow its modal share from 23% in 2011 to 33% in 2040. Key transportation infrastructure in this corridor includes US 45, KCS/Artesia subdivision mainline and the Tennessee-Tombigbee Waterway inland ports.

Key features of this corridor include:

- primary commodities shipped through the corridor: coal minerals, crude oil, chemical petroleum products
- top statewide freight counties served: Lowndes, Monroe

- critical connectors to major generators or intermodal elements:
  - rail: KCS and Columbus and Greenville Railway (CAGY) to Lowndes County Port
  - ports and waterways: NHS Intermodal Connectors to Port of Aberdeen, Port of Amory, and Lowndes County Port

US 61 (Southaven-Vicksburg-Natchez) Corridor

The US 61 (Southaven-Vicksburg-Natchez) Tier II Corridor runs north-south through the western portion of the state along US 61, parallel to the Mississippi River, and near its multiple ports. At 317 miles, this is the longest of all MFN corridors. With multiple Mississippi River ports, the US 61 corridor has the largest percentage of waterborne freight flows of all Tier II corridors (outside the water-only Tennessee-Tombigbee Waterway Corridor). Key transportation infrastructure in this corridor includes US 61 and five Mississippi River inland ports: Port of Natchez, Port of Rosedale, Port of Vicksburg, Port of Greenville, and Port of Claiborne County.

Key features of this corridor include:

- primary commodities shipped through the corridor: chemical petroleum products, coal minerals, crude oil
- top statewide freight counties served: Warren, Washington
- critical connectors to major generators or intermodal elements:
  - highways: US 84/US 425, US 49, US 61 Business, MS 8, and US 278/MS 6
  - rail: Vicksburg Southern Railroad (VSOR) to Port of Vicksburg; Great River Railroad (GTR) to Port of Rosedale; Columbus and Greenville Railway (CAGY) to Port of Greenville; and Natchez Railway, LLC (NTZR) to Port of Natchez
  - ports and waterways: NHS Intermodal Connectors to Port of Vicksburg, Port of Rosedale, and Port of Natchez

US 72/NS (Mt. Pleasant-Corinth-Iuka) Corridor

The 90 mile US 72/NS (Mt. Pleasant-Corinth-Iuka) Corridor runs west-east through the northern portion of the state along US 72, with NS Crescent corridor mainline parallel to the highway facility in the northeastern section of the corridor. Rail freight was the dominant mode in 2011, accounting for 68% of the total corridor freight by tonnage. Truck freight is expected to grow its modal share from 30% in 2011 to 51% in 2040 and overtake rail as the dominant freight movement mode. The Yellow Creek Port located on Tenn-Tom Waterway is served by a short line operated by KCS. Key transportation infrastructure in this corridor includes US 72, NS mainline, and Yellow Creek Port.

Key features of this corridor include:

- primary commodities shipped through the corridor: coal minerals, crude oil, secondary traffic
- top statewide freight counties served: none
- critical connectors to major generators or intermodal elements:
  - highways: MS 25
  - rail: Yellow Creek Port Railroad (YCRK) providing access to Yellow Creek Port
  - ports and waterways: NHS Intermodal Connector to Yellow Creek Port

US 82 (Greenville-Winona-Columbus) Corridor

The 179 mile US 82 (Greenville-Winona-Columbus) Corridor runs west-east through the north-central part of Mississippi along US 82. This Tier II Corridor is also the only MFN corridor that provides a direct connection between Mississippi River and the Tennessee-Tombigbee Waterway. Rail freight was the dominant mode in 2011, accounting for 64% of the total corridor freight by tonnage. Truck freight is expected to grow its modal share from 31% in 2011 to 37% in 2040. Key transportation infrastructure in this corridor includes US 82, the Port of Greenville, and Lowndes County Port.

Key features of this corridor include:

- primary commodities shipped through the corridor: coal minerals, crude oil, chemical petroleum products
- top statewide freight counties served: Lowndes, Choctaw, Washington
- critical connectors to major generators or intermodal elements:
  - highways: MS 1
  - rail: Columbus and Greenville Railway (CAGY) serving Port of Greenville and Lowndes County Port
  - ports and waterways: NHS Intermodal Connectors to Port of Greenville and Lowndes County Port

US 98/CN (McComb-Hattiesburg-Lucedale) Corridor

The 141 mile US 98/CN (McComb-Hattiesburg-Lucedale) Corridor provides vital regional level west-east connectivity between freight activity centers in southern Mississippi. It runs west-east through the south-central part of the state along US 98 from I-55 east, via Hattiesburg, to Alabama state border. The CN mainline runs parallel to US 98 from Hattiesburg to Alabama state line (the same CN mainline extends northwest of Hattiesburg and is part of the US 49/CN Tier I Corridor). Rail freight was the dominant mode in 2011, accounting for 60% of the total corridor freight by tonnage. Truck freight is expected to grow its modal share from 41% in 2011 to 47% in 2040. Key transportation infrastructure in this corridor includes US 98, and CN mainline.

Key features of this corridor include:

- primary commodities shipped through the corridor: chemical petroleum products, coal minerals, crude oil
- top statewide freight counties served: none
- critical connectors to major generators or intermodal elements:
  - highways: MS 13, MS 589
  - rail: Mississippi Export Railroad (MSE)

Tennessee-Tombigbee Waterway (Yellow Creek Port-Lowndes County Port)

The Tennessee-Tombigbee Waterway, a designated national marine highway, runs north-south through the eastern portion of Mississippi. The Waterway connects the Tombigbee River with the Tennessee River, creating a water transportation route that serves 23 southern and mid-western states from the Gulf of Mexico (Port of Mobile) northward. In 2011, the Tenn-Tom carried nearly 2 million tons of goods.

Six public ports are located in Mississippi: Port of Aberdeen, Port of Itawamba, Lowndes County Port, Port of Amory, Yellow Creek Port, and Clay County Port. Beyond Mississippi, inland ports provide feeder service for international and domestic shipments downstream through Mobile, Alabama. The national and statewide significance of the Tenn-Tom ports is signified by the fact that all but one are served by the NHS Intermodal Connectors. Inland port alternatives along the Tenn-Tom help keep rates for other modes competitive.

Key features of this corridor include:

- primary commodities shipped through the corridor: lumber furniture, coal minerals, crude oil, concrete/glass/metal
- top statewide freight counties served: Warren, Washington
- critical connectors to major generators or intermodal elements:
  - highways: NHS Intermodal Connectors providing last mile access to Port of Itawamba, Lowndes County Port, Yellow Creek Port, Port of Amory, and Port of Aberdeen
  - rail: Mississippian Railway Cooperative (MSRW) to Port of Itawamba; KCS and Columbus and Greenville Railway (CAGY) to Lowndes County Port; Yellow Creek Port Railroad (YCRK) to Yellow Creek Port; BNSF to vicinity of the Port of Amory

4 Mississippi Primary Freight Network System Performance Assessment

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, freight network performance measures have been identified, reflecting system goals and objectives. Each MFN corridor and their primary highway and rail facilities have been assessed against those measures since they make up 92 percent of the total mode share. Performance of ports/waterways and airports was not assessed in detail as part of this analysis since their corresponding statewide plans have already or will soon address their performance. The result is a needs assessment for each corridor, with a corresponding set of potential projects that would address the identified freight movement needs.

4.1 Mississippi Primary Freight Network Performance Measures

To meet the economic prosperity goals of the state, it is imperative that Mississippi's primary freight network operate at a high performance level, to support the logistics and supply chain requirements of the state's business sector, to ensure public safety, and to enhance public infrastructure preservation. Shown in **Table 4.1** below is a set of performance measures that form the basis for an assessment of the MFN and its individual facilities. Derived from the freight goals and objectives presented earlier, these measures are stratified into Tier I and Tier II measures. Details on the MFN corridor performance assessment methodology can be found in **Appendix D**.

4.2 Mississippi Primary Freight Network System Needs Assessment

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.

Table 4.1 - 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)

4.2.1 Highway Level of Service

Existing and anticipated highway level of service (LOS) is seen as a proxy for the reliability of truck freight flow within the corridor. It is reasoned that congestion as reported by level of service is a reasonable measure of truck travel reliability. As shown in **Table 4.2** below:

- Of the Tier I primary facilities, only the I-10 corridor currently exhibits any significant congestion, with 15 miles (19 percent of 72 mile length) operating more poorly than the performance target.
- By 2040, congestion on the Tier I primary highways will increase significantly, with 34 percent of the 949 miles in the six corridors failing to meet performance targets. Nearly all of the I-10 corridor (93 percent) will be congested, and 41 percent of the 155-mile I-20 corridor will face unacceptable congestion. To ensure the efficient movement of freight along the Tier I system, it would appear that Mississippi will need to consider capacity improvements.
- Congestion on Tier II primary routes is much less problematic than on Tier I corridors. Currently, only 1 percent of Tier II primary route mileage fails to meet performance targets, and by 2040, only 6 percent of corridor length is expected to be unacceptably congested; none of the Tier II corridor primary highways will approach the congestion that is expected even along the least congested Tier I corridors. While there is likely to be congestion as Tier II corridors enter urban

areas, such as MS 25 entering Jackson, based on a systems-level assessment of Tier II LOS performance, it does not appear that any programmatic Tier II capacity improvement program is needed to support freight movement.

Table 4.2 - Mississippi Primary Freight Network Highway Level of Service

Corridor	Length of 2011 High V/C Segments (mi)	Length of 2040 High V/C Segments (mi)	Total Corridor Length (mi)	% of High V/C Length (2011)	% of High V/C Length (2040)	Average % Trucks	Average Total Daily Volume (2011)
Tier I Corridors							
I-10/CSXT	15	72	78	19%	93%	14%	47,418
I-20/KCS	3	64	155	2%	41%	21%	28,697
I-55/CN	8	66	290	3%	23%	16%	26,162
I-59/NS	0	35	155	0%	22%	16%	17,394
US 49/CN/KCS	9	46	154	6%	30%	10%	20,721
US 78 (I-22)/BNSF	0	37	118	0%	31%	11%	18,435
Tier I Sub Total	35	320	950	4%	34%	16%	25,080
Tier II Corridors							
MS 25	7	13	124	5%	10%	7%	8,902
MS 27	0	0	41	0%	1%	6%	3,383
US 45/KCS	0	23	266	0%	8%	11%	8,953
US 61	0	14	317	0%	4%	8%	6,771
US 72/NS	0	1	90	0%	1%	16%	9,722
US 82	0	8	179	0%	5%	9%	9,978
US 98/CN	8	11	141	5%	8%	11%	10,389
Tier II Sub Total	15	70	1,158	1%	6%	10%	8,544
Grand Total	50	390	2,108	2%	19%	14%	15,954

Source: MDOT traffic and roadway characteristics database and Atkins analysis.
Note: Performance target for average level of service for primary corridor highways is better than LOS C for rural areas and LOS D for urban areas.
All urban non-interstate roadways were assumed to have an average of >0 to 1.99 signals per mile. This assumption resulted in a factor of 1.73 being applied to the capacity (i.e., divide the capacity by 1.73) of all non-interstate roadways.

In addition to consideration of extended sections of congested roadway, the study has attempted to identify specific congestion bottlenecks that restrict freight flow. Sources for this information were the American Transportation Research Institute's FPM initiative Nationwide Bottleneck Analysis and solicitation of input from the state's shippers and carriers.

- According to FHWA/ATRI analysis of trucking bottlenecks, only two locations in Mississippi, in Jackson at the I-20/I-55 interchange, and in Meridian at the I-20/I-59 interchange, present significant routine congestion.
- MFN corridor bottlenecks identified by FAC or from surveys included:

- I-55: between Ridgeland and Madison; between McDowell Rd and Savanna St. in Jackson;
- I-20: interchanges with I-55 and I-220 in Jackson; Pearl River Bridge;
- I-10: Pascagoula River Bridge;
- US 49: between I-20 and Star; between Hattiesburg and Port of Gulfport;
- Low bridge weight limits and bridge vertical clearance conditions;
- Rail: Canadian National Class I mainline from Jackson to Grenada (parallel to I-55).

4.2.2 Highway Safety

Existing and anticipated highway safety is important to ensure public safety, especially in the movement of hazardous cargo, motor carrier safety, and the efficient flow of freight through the supply chain. To assess motor carrier safety, the study team examined the primary facilities along each MFN corridor, to identify highway segments or high crash locations relative to statewide averages. For Tier I corridor facilities, the performance target is an average crash rate of less than 80 percent of the statewide average (174 crashes per 100 million vehicle miles traveled, or 100 mvmt). For Tier II corridor facilities, the performance target is less than the statewide average. As shown in **Table 4.3** below:

- Of the Tier I corridor primary highway facilities, only the US 49 corridor currently performs more poorly than the performance target, with an average crash rate in 2011 of 364 crashes per 100 mvmt. This suggests that the US 49 corridor may need a focused program of safety improvements if it is to operate safely and efficiently for improved freight movement.
- Overall, Tier I corridors operate relatively safely, with an overall crash rate of 130/100 mvmt and 15 percent of the 949 miles having crash rates exceeding the target. This suggests that Tier I corridors do not need an overall program of safety improvements, but would benefit from spot safety improvements during implementation of other, non-safety improvements.
- The Tier II corridor primary highway facilities perform significantly more poorly from a safety perspective than do the Tier I corridor facilities. Only the US 45 corridor has a crash rate lower than the statewide average. 28 percent of the MS 27 corridor fails to meet the recommended safety standard. Also of note is the poor performance of the US 72 corridor, with a crash rate higher than the overall Tier II corridor average and also with a percentage of trucks approaching or even exceeding some of the Tier I corridors, which are dominated by Interstate highways.

4.2.3 Highway Infrastructure: Pavement Condition

Freight movement efficiency can be adversely affected by deteriorating highways. Excessive roughness reduces fuel efficiency and increases vehicle maintenance costs. For MFN highways, a performance target based on the International Roughness Index for Tier I highways is that 65 percent of corridor miles have a rating of 95 or better. An IRI of 95 is consistent with recommendations of the American Association of State Highway and Transportation Officials (AASHTO). For Tier II highways, the target is for 60 percent of corridor miles to have a rating of 95 or better. As shown in **Table 4.4** below:

- Of the Tier I corridors, with the target of >75 percent of the corridor meeting the standard, pavement condition is becoming problematic for MDOT. While the I-10 and I-59 corridors

exhibit overall good condition, the other four Tier I corridors will fall below the target without remedial resurfacing or even reconstruction.

- Of the Tier II corridors, with the target of >65 percent of the corridor meeting the standard, the MS 27 and US 82 corridors will fall below standard within the next decade without resurfacing or reconstruction.
- On the whole, system-wide pavement deterioration does not pose a major challenge to MDOT.

Table 4.3 - Mississippi Primary Freight Network Highway Safety Performance

Corridor	High Crash Segments (mi)	Total Length (mi)	% of Length	Average % Truck Mix	Average Crash Rate (2011)
Tier I Corridors					
I-10/CSXT	8	78	10%	14%	75
I-20/KCS	26	155	17%	21%	104
I-55/CN	38	290	13%	16%	109
I-59/NS	21	155	14%	16%	95
US 49/CN/KCS	40	154	26%	10%	364
US 78 (I-22)/BNSF	13	118	11%	11%	65
Tier I Sub Total	147	949	15%	16%	130
Tier II Corridors					
MS 25	22	124	18%	7%	265
MS 27	12	41	28%	6%	316
US 45/KCS	37	266	14%	11%	112
US 61	62	317	19%	8%	225
US 72/NS	16	90	18%	16%	230
US 82	35	179	20%	9%	211
US 98/CN	26	141	19%	11%	292
Tier II Sub Total	210	1,158	18%	10%	211
Grand Total	**357**	**2,107**	**17%**	**14%**	**154**

Source: MDOT highway safety data.
Note: Performance target for corridor average crash rate is 80% of statewide average of 174 crashes per 100M VMT for Tier I corridors (or < 137) and less than statewide average for Tier II corridors. Cells in red indicate crash rate is exceeded.

Table 4.4 - Mississippi Primary Freight Network Highway Pavement Performance							
Corridor	**Total Center-line Miles**	**Miles w. IRI<65**	**Miles w. IRI 65-80**	**Miles w. IRI 81-95**	**Total Miles w. IRI<95**	**Miles w. IRI>95**	**Miles w. IRI<95 (%)**
Tier I Corridors							
I-10/CSXT	78	20	11	43	74	4	95%
I-20/KCS	155	26	60	28	108	41	70%
I-55/CN	290	122	40	38	200	90	69%
I-59/NS	155	116	2	18	136	19	88%
US 49/CN/KCS	154	82	20	6	107	46	70%
US 78 (I-22)/BNSF	118	35	26	21	82	36	70%
Tier I Sub Total	949	401	159	154	708	235	75%
Tier II Corridors							
MS 25	124	19	41	50	110	14	89%
MS 27	41	0	4	19	23	18	56%
US 45/KCS	266	97	115	24	235	31	88%
US 61	317	91	107	79	270	41	85%
US 72/NS	90	25	33	16	74	16	82%
US 82	179	35	45	30	109	69	61%
US 98/CN	141	28	55	19	98	40	70%
Tier II Sub Total	1,158	293	400	237	919	228	79%
Grand Total	**2,107**	**694**	**559**	**391**	**1,627**	**463**	**77%**

Source: MDOT pavement conditions data; Atkins analysis.
Notes: Performance target for pavement condition is IRI rating better than 95 for at least 75% of primary route miles for Tier I and 65% for Tier II facilities. Cells in red indicate pavement condition target is exceeded.

4.2.4 Highway Infrastructure: Structures Condition

Two measures were used to assess the degree to which highway bridges along the primary Tier I and Tier II freight corridors facilitate freight movement: bridge vertical clearance and presence of weight restrictions. It is reasoned that low or inconsistent vertical clearance will result in either excessive truck diversion along the immediate route, thus slowing traffic on the diversion route or degrading local travel safety, or will lead carriers to avoid the corridor altogether, causing logistics issues for shippers within a corridor. As shown in **Tables 4.5** and **4.6**:

- Most Tier I corridor bridges meet the standard 16 feet Interstate highway bridge clearance target. I-55 has the most deficient bridges out of all the Interstates followed by I-20 with ten low bridges. US 49 fares the worst of all Tier I corridor facilities on a percentage basis). To meet that standard across Tier I would require implementation of a fairly robust bridge reconstruction program, resulting in either raising or replacing 56 Tier I bridges;
- Along the Tier II corridors, with a less aggressive standard of 15 feet, no bridges would need to be raised or replaced;

- Weight-restricted bridges pose little problem on either Tier I or Tier II highways. No Interstate highways are posted and only two other Tier I bridges, on US 49 south of Jackson, have a weight restriction. Similarly, only four Tier II highway bridges are posted, two on MS 27 southwest of Jackson and two on US 98, neither of which have significant total or truck traffic volumes;
- On a programmatic basis, the most benefit might be gained by improvements to Tier I bridges, with focused structure investments to raise bridges up to the 16' vertical clearance standard along the most affected US 49, I-55, and I-20 corridors. While weight-restricted bridges should be monitored closely, there is little basis for programmatic replacement, particularly in light of the relatively light traffic on the affected highways.

Table 4.5 - Mississippi Primary Freight Network Highway Bridge Clearance Performance

Corridor	Total # Bridges	Deficient Bridge	% Deficient	Length (mi)	Average Total Daily Volume (2011)	Average % Truck Mix
Tier I Corridors						
I-10/CSXT	9	1	11%	78	47,418	14%
I-20/KCS	80	11	14%	155	28,697	21%
I-55/CN	113	26	23%	290	26,162	16%
I-59/NS	48	7	15%	155	17,394	16%
US 49/CN/KCS	13	10	77%	154	20,721	10%
US 78 (I-22)/BNSF	51	1	2%	118	18,435	11%
Tier I Sub Total	314	56	18%	949	25,080	16%
Tier II Corridors						
MS 25	9	0	0%	124	8,902	7%
MS 27	2	0	0%	41	3,383	6%
US 45/KCS	35	0	0%	266	8,953	11%
US 61	12	0	0%	317	6,771	8%
US 72/NS	3	0	0%	90	9,722	16%
US 82	13	0	0%	179	9,978	9%
US 98/CN	5	0	0%	141	10,389	11%
Tier II Sub Total	79	0	0%	1,158	8,544	10%
Grand Total	393	56	14%	2,107	15,954	14%

Source: MDOT bridge conditions date; Atkins analysis.
Notes: Performance measure for bridge vertical clearance is greater than 16 feet for Tier I and 15 feet for Tier II.

Table 4.6 - Mississippi Primary Freight Network Highway Bridge Weight Performance						
Corridor	**Total Mainline Bridges**	**Posted Bridges**	**% Deficient**	**Length (mi)**	**Average Total Daily Volume (2011)**	**Average % Truck Mix**
Tier I Corridors						
I-10/CSXT	66	0	0%	78	47,418	14%
I-20/KCS	143	0	0%	155	28,697	21%
I-55/CN	237	0	0%	290	26,162	16%
I-59/NS	89	0	0%	155	17,394	16%
US 49/CN/KCS	71	2	3%	154	20,721	10%
US 78 (I-22)/BNSF	113	0	0%	118	18,435	11%
Tier I Sub Total	719	2	0%	949	25,080	16%
Tier II Corridors						
MS 25	73	0	0%	124	8,902	7%
MS 27	9	2	22%	41	3,383	6%
US 45/KCS	217	0	0%	266	8,953	11%
US 61	116	0	0%	317	6,771	8%
US 72/NS	60	0	0%	90	9,722	16%
US 82	113	0	0%	179	9,978	9%
US 98/CN	64	2	3%	141	10,389	11%
Tier II Sub Total	652	4	1%	1,158	8,544	10%
Grand Total	**1371**	**6**	**0%**	**2,107**	**15,954**	**14%**

Source: Atkins analysis.
Notes: Posted bridges are those for which signed weight restrictions are in place.

4.2.5 Railroad Weight Capacity

Railroad weight capacity is and will continue to be critical to maintaining freight rail movement efficiency and cost advantage. All major MFN rail carriers are projected an increase in cargo volumes and commodity flows in the future except for the NS and BNSF lines in the northeastern quadrant of the state and the CN line along US 49 in the southeastern quadrant of the state. As part of the national rail system, Mississippi's railroads are generally maintained to handle carloadings with a gross weight of up to 286 thousand (286k) pounds. Consistency with this standard means that Mississippi shippers can optimize their shipments and reduce shipping costs. However, when the weight capacity on a rail line is less than that amount, shippers are put at a competitive disadvantage. For that reason, this statewide freight plan is establishing at a performance measure the ability of Tier I and Tier II rail lines to match that standard. The majority of Mississippi's rail network is capable of handling 286k pound loadings, but there are significant lines that are not, including the Tier II US 45/KCS Artesia subdivision mainline from West Point to Corinth.

4.2.6 Railroad Speed (Track Condition)

The speed with which railroad companies are able to move freight over their systems is a critical element in their competitiveness for movement of higher value, time sensitive freight. Average line speed is one element of the overall speed. While overall freight movement time is also dependent on frequency of pick-up and delivery and on rail yard capacity, line speed is used here as proxy for overall speed. Using FRA grade crossing inventory databases, the study team documented posted train speeds across public crossings. Grade crossing speeds for Tier I and Tier II rail lines are stratified based on FRA safety regulations.

As shown in **Figure 4.1**:

- Of the Tier I rail lines, CN's mainline in the I-55 corridor and the NS line mainline in the I-59 corridor, both of which serve Amtrak passenger routes, generally allow freight speeds of up to 60 mph; similarly, the KCS mainline along the I-20 corridor and the BNSF line in the US 78 corridor allow freight train speeds of up to 60 mph;
- Speeds on the CSXT mainline in the I-10 corridor vary from Class 3 freight train speeds of less than 39 mph on some short segments to Class 4 speeds of up to 60 mph;
- Speeds on the CN mainline from Jackson to Hattiesburg vary from Class 2 freight train speeds of less than 25 mph on some segments to Class 4 speeds of up to 60 mph;
- The entire KCS mainline from Hattiesburg to Gulfport outside of short segments in Wiggins and south of I-10 in Gulfport has recently been upgraded to Class 3 track, allowing speeds of up to 40 mph, resulting in improved rail access to the Port of Gulfport.
- Train speeds along the Tier II rail lines are generally slower, with trains operating on single track lines with line speeds of less than 39 mph.

4.2.7 Railroad Safety

As with highway safety, preserving a safe rail operating environment is critical to the efficient flow of freight in the rail system. While maintenance of the rail network is the responsibility of the privately owned railroad companies, the key point of contact between freight railroads and the public is at rail-highway grade crossings. As Mississippi's economy grows and freight traffic increases on both major rail lines and on highways, an indicator of rail safety is grade crossing safety. The performance measure used to assess rail safety is the degree to which highway crossings primary MFN rail lines have active crossing warning equipment. For both Tier I and Tier II primary rail lines, the target is that all public roads with a functional classification (as determined by MDOT) of collector road or higher should have active crossing warning devices consisting at a minimum of flashers and gates.

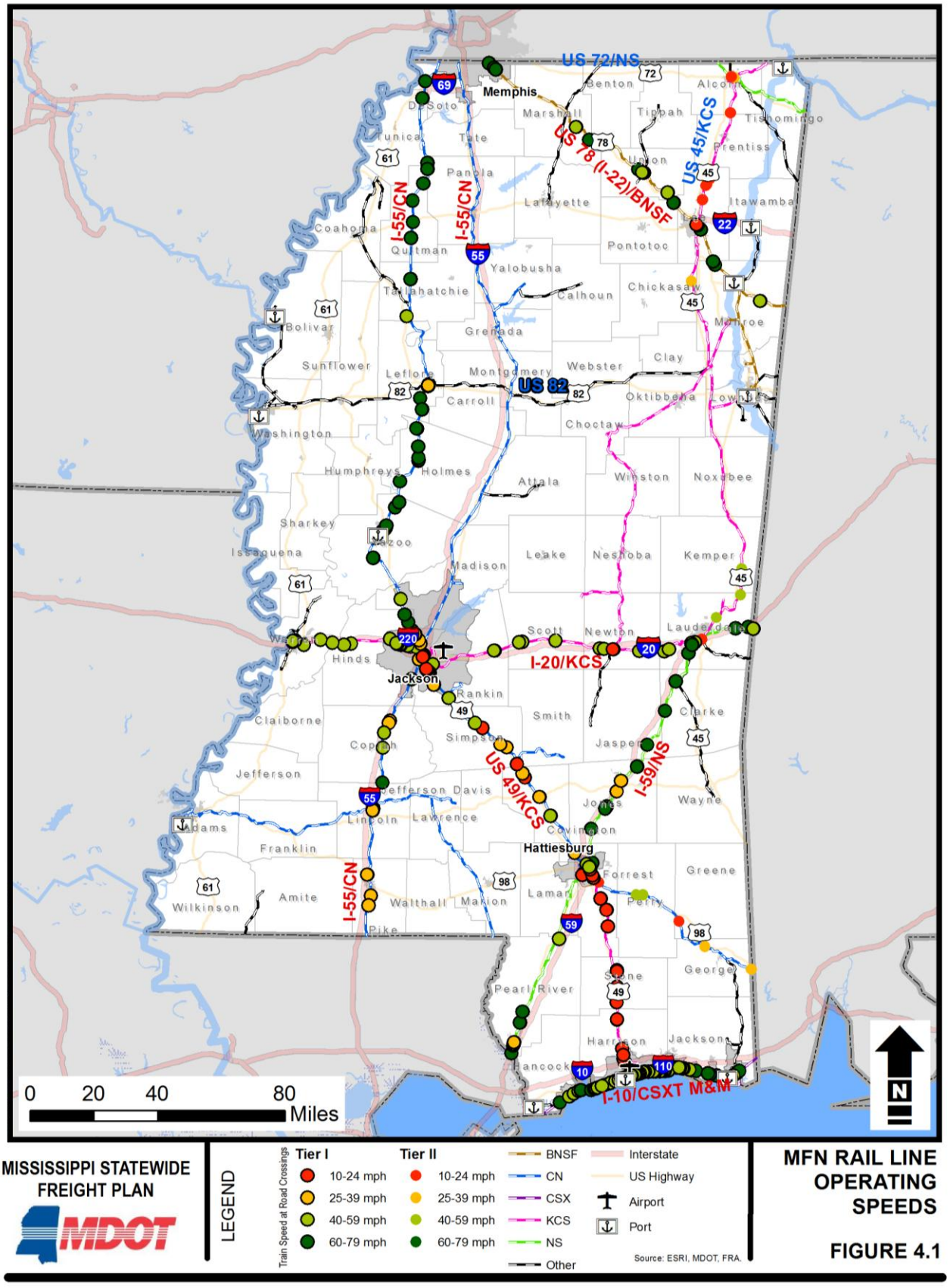

US 72/NS
Memphis
US 78 (I-22)/BNSF
US 45/KCS
I-55/CN
I-55/CN
US 82
I-20/KCS
Jackson
US 49/KCS
I-59/NS
Hattiesburg
I-55/CN
I-10/CSXT M&M
0 20 40 80 Miles
N
MISSISSIPPI STATEWIDE FREIGHT PLAN
MDOT
LEGEND
Train Speed at Road Crossings
Tier I
10-24 mph
25-39 mph
40-59 mph
60-79 mph
Tier II
10-24 mph
25-39 mph
40-59 mph
60-79 mph
BNSF
CN
CSX
KCS
NS
Other
Interstate
US Highway
Airport
Port
Source: ESRI, MDOT, FRA.
MFN RAIL LINE OPERATING SPEEDS
FIGURE 4.1

Table 4.7 - Mississippi Primary Freight Network Rail Crossing Safety Performance							
		# of Public Road Crossings		Public Crossing Warning (1)			
Corridor	Rail Length (mi)	Total	Collector + (2)	No warning devices	Passive	Active 1	Active 2
Tier I Corridors							
I-10/CSXT	74	151	72	2	7	26	37
I-20/KCS	138	135	43	0	4	16	23
I-55/CN	305	282	81	2	8	19	52
I-59/NS	171	161	30	0	2	5	23
US 49/CN/KCS (3)	161	257	49	0	13	25	11
US 78 (I-22)/BNSF	130	146	21	0	4	6	11
Tier I Sub-Total	979	1,132	296	4	38	97	157
Tier II Corridors							
MS 25	0	0	0	0	0	0	0
MS 27	0	0	0	0	0	0	0
US 45/KCS	212	193	15	0	9	3	3
US 61	0	0	0	0	0	0	0
US 72/NS	36	31	2	0	0	2	0
US 82	0	0	0	0	0	0	0
US 98/CN	68	82	10	0	5	5	0
Tier II Sub-Total	317	306	27	0	14	10	3
Grand Total	**1,296**	**1,438**	**323**	**4**	**52**	**107**	**160**

Source: Atkins analysis of USDOT Rail Crossing Inventory.

Notes:

(1) Crossing warning:
No warning devices: no signs, flashers, or gates
Passive: signs (x-bucks) only
Active 1: Flashers only
Active 2: Flashers and gates

(2) Crossings where roadway functional classification is Collector or higher.

(3) Does not reflect potential safety improvements due to recent track speed upgrades to Class 4 standards

As shown in **Table 4.7** above:

- Of Mississippi's 1,438 public roads grade crossings, only 323 are crossings of public roads of (functional classification) collector status or higher.
- For Tier I primary rail lines, 47 percent of targeted collector road crossings do not meet the performance target of having flashers and gates. Along these rail lines, 42 of the 296 public collector road crossings have no active protection, and in the I-10/CSXT and I-55/CN corridors, four such crossings are reported to have no protection for highway vehicles.

- For Tier II primary rail lines, 89 percent of targeted crossings do not meet the performance target of having flashers and gates. 52 percent of targeted crossings are reported to have no flashers and gates, with only passive protection.
- While additional analysis of grade crossing safety is needed to identify specific highway crossings along the MFN that might be experiencing high crash rates, the public benefit of upgrading those unprotected higher traffic volume public highway crossings of higher speed, higher train volume rail lines is clear. Particularly when heavier freight traffic is involved, the implications of crashes in terms of both public safety and loss of property can be severe.

4.3 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. A summary of overall MFN system performance assessment is provided in **Table 4.8**. 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. The result is that Mississippi businesses have good opportunity in all directions for competitive freight transport to national and international markets.
- While there are relatively isolated areas and sections of primary highway that experience short periods of congestion currently, and the extent of those areas will expand over the planning period, on the whole, Mississippi Freight Network does not exhibit broad stretches of congested roadway that adversely impact the overall reliability and cost of truck operations. There is little to indicate that MDOT needs to consider overall corridor improvement strategies that focus on increased roadway capacity for truck operations. Principal sections of focus should be the entire I-10 corridor and segments of I-20 and I-55 traversing the Jackson urban area.
- Important state freight highways are experiencing high overall crash rates, with adverse impact on truck movement. While Tier I corridors, most of which are Interstate highways, 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. Freight stakeholders have not indicated that supply of warehousing or distribution centers is at issue, and no significant bottlenecks in the rail network in Mississippi have been identified. As the national economy has continued to rebound from the recession starting at the end of the last decade, there have been national reports of significant delays of rail freight in traversing major rail hubs, but this has not been reported in Mississippi.
- Truck-borne freight flow could benefit by an increase of Interstate highway bridge clearance, and 56 Interstate bridges would fall into this program. 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, as well as the general public, would benefit from enhanced rail grade crossing protection, particularly on unprotected crossings of higher volume highways with higher speed, higher volume rail lines. While no rail safety issues have been noted, efforts to bring all Tier I rail crossings to the recommended performance targets will greatly reduce potential for truck/train crashes.
- Building on the summary of movement of natural resources such as mining, energy, agricultural, and timber (Section 2.4), and the impact on the highway network, there is no evidence that Mississippi highways are receiving unusual wear and tear as a result of trucking activity in the resource extraction areas. The forestry and poultry industries have expressed concern about posted bridges that are focused on the secondary road network.

Table 4.8 - Summary of Mississippi Primary Freight Network System Performance									
Corridor	Highway Measures					Railroad Measures			
	Primary Highway Length (mi)	Level of Service (2011/2040)(1)	Safety (2)	Infra-structure: Pavement (3)	Infra-structure: Bridges (3)	Primary Rail Line Length (mi)	Weight Capacity (4)	Speed/ Track Condition (5)	Safety (6)
Tier I Corridors									
I-10/CSXT	78	G/P	G	G	G	74	G	M	M
I-20/KCS	155	G/M	G	M	G	138	G	G	M
I-55/CN	290	G/M	G	M	M	305	G	G	M
I-59/NS	155	G/M	G	G	G	171	G	G	G
US 49/CN/KCS	154	G/M	P	M	P	161	G	M	P
US 78 (I-22)/BNSF	118	G/M	G	M	G	130	G	G	M
Tier II Corridors									
MS 25/KCS	124	G/G	P	G	G	-	-	-	-
MS 27	41	G/G	P	M	G	-	-	-	-
US 45/KCS	266	G/G	G	G	G	212	M/P	M	P
US 61	317	G/G	P	G	G	0	-	-	-
US 72/NS	90	G/G	P	G	G	36	G	N/A	P
US 82	179	G/G	M	M	G	-	-	-	-
US 98/CN	141	G/G	P	G	G	68	G	N/A	P

Source: Atkins analysis.

Performance Measure

1. LOS: Urban LOS D or better; Rural LOS C or better
2. Highway safety: Primary route annual crash rate < 139 (Tier I) or 174 (Tier II)/100M vmt
3. Pavement: IRI rating 75%/65% (Tier I/Tier II) of primary route miles < 95
   Bridges: All main line bridges >16'/15' vertical clearance (Tier I/Tier II)
4. Rail weight capacity: 100% of track able to carry > 286k lb. carloads
5. Track condition: core track meets or exceeds FRA Class 4 (Tier I) or Class 3 (Tier II)
6. All public road crossings of functional classification Collector or greater equipped with active crossing warning devices (gates and flashers)

Rating scale:

1. Good: <20% of miles with poor LOS; Moderate: 20 – 50% with poor LOS; Poor: >50% with poor LOS
2. Good: crash rate < target; Moderate: crash rate 100 – 125% of target; Poor: : crash rate > 125% of target
3. Good: <20% of route exceeds IRI or bridge clearance target; Moderate: 20 – 50% exceeds target; Poor: >50% exceeds target.
4. Good: <20% of corridor below target; Moderate: 20 – 50% below target; Poor: >50% below target.
5. Good: >75% of route exceeds target; Moderate: 25 - 75% exceeds target; Poor: <25% exceeds target.
6. Good: >75% of public collector crossings with warning; Moderate: 25 - 75% of crossings with warning; Poor: <25% of crossings with warning.

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**, which was referenced earlier. **Table 5.1** 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.

Table 5.1 – 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 5.1 – 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 5.1 – 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; MDOT Preliminary Prioritization List; 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 Recommended Freight Network Improvement Strategies and Implementation Plan

This chapter presents a set of recommended freight system improvement strategies for Mississippi and proposes a plan for implementation of those strategies. These recommendations and implementing 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. Finally, the 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 identified earlier in this report. Together, they define an overall roadmap for MDOT for improving Mississippi's freight system. Improvement strategies can include infrastructure expansion or modernization, operational programs that increase the efficiency of existing infrastructure, or policy provisions that reduce the burdens on freight shippers and carriers. In presenting the implementation plan, consideration will be given to how the plan will support state and national freight goals, define policies, and identify a freight system monitoring program.

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 network, 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 the Memphis area

Next, efforts to optimize the MFN seek to be consistent with the Freight Plan goals, which as detailed in Chapter 2 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 – the institutional rules that govern freight operations and safety
- Programs – the MDOT or other agency efforts to optimize state investment in a manner consistent with goals achievement
- Projects – the specific infrastructure investments that will provide day-to-day improvement for freight operations and safety

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

6.2 Alternative Freight Improvement Strategies

In preparing statewide freight plans consistent with federal MAP-21 requirements, USDOT urges states to develop freight system improvement strategies that are responsive to freight system trends, needs, and issues, and that will improve the ability of the state to meet national freight goals (national freight goals listed in Chapter 2). Improvement strategies should also recognize specific freight mobility issues, such as bottlenecks or "last mile" access issues, and consider technology and operational strategies that improve efficiency and safety of freight movement. From Mississippi's perspective, it is also important that freight improvement strategies are responsive to programmatic issues, reinforce broader transportation objectives, and leverage existing programs that are reflected in the state's existing Statewide Transportation Improvement Program.

In establishing freight improvement recommendations within a financial environment of limited resources, there are options for allocation of those resources. **Table 6.1** offers a set of potential Mississippi Freight Network improvement strategies that seek to be responsive to the state's freight goals and objectives, as defined in Chapter 2. For each of the five freight goals, one or more related strategies are identified. Each potential freight project identified previously could be assigned to one or more of the potential strategies to begin to form a programmatic approach to freight network infrastructure and operational improvements.

Table 6.1 - Potential Mississippi Freight Network Improvement Strategies	
MSFP Freight Goals and Objective	**Potential Responsive Freight Improvement Strategies**
Goal: Improve economic benefits of the statewide freight network. *Objective: Increase public investment to facilitate freight system improvements that generate jobs and enhance MS's competitive position.*	Programmatic goal; no freight-specific improvement strategies identified.
Goal: Improve reliability and reduce congestion on the priority freight corridors. *Objective: Provide predictable travel times along identified freight corridors by reducing time delays.*	Improve capacity on primary corridor highways with extensive congestion to reduce delay and improve reliability; Apply advanced technology to improve safety and efficiency of freight operations.
Goal: Protect the safety and security of freight infrastructure. *Objective: Reduce the number and rate of freight-movements related fatalities and injuries.*	Improve primary corridor highway facility geometrics or operating conditions in high-crash corridors; Upgrade unprotected rail grade-crossings on primary highway corridors to reduce crash threat and improve safety and reliability.
Goal: Maintain the MS freight network infrastructure in a state of good repair. *Objective: Continuously improve infrastructure conditions that affect freight bottlenecks and reliability issues.*	Reconstruct primary corridor weight-limited bridges to allow vehicle weight consistency and reduce out-of-direction truck movement; Upgrade pavement condition on primary Tier I and/or Tier II freight highways to reduce operating cost and accelerated pavement degradation; Upgrade primary rail lines to provide target FRA class and line speed, to improve reliability.
Goal: Protect and enhance the environment while enhancing the freight network performance. *Objective: Implement freight-specific environmental stewardship programs to reduce impact of freight movement on the state's communities.*	Improve primary corridor highway facility geometrics or operating conditions in high-crash corridors to reduce hazmat spills due to crashes; Upgrade primary rail lines to provide target FRA class to reduce hazmat spills due to derailments.

6.3 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. Reflecting the broader transportation goals set in MULTIPLAN 2035, following are considerations in setting strategic priorities:

1. Safety Improvements – MDOT's overall departmental goals place very high priority on public safety; freight safety projects directed at high-crash locations or sections of road or railroad

have promise of returning high public safety benefits relative to project cost and directly reflect MDOT's priority for protecting public safety.

2. Investment (Infrastructure) Preservation – Overall MDOT goals also place high priority on infrastructure investment preservation; failure to provide adequate maintenance for infrastructure preservation invariably leads to higher future costs, as routine maintenance is replaced by much more costly reconstruction; poor infrastructure condition also affects freight carrier operating costs, in terms of vehicle/rolling stock maintenance and travel time.
3. Operational Efficiency Enhancement – MDOT has an active program for implementing high-tech traffic management strategies based on Intelligent Transportation System technologies. Elements such as Weigh-in-Motion truck weight stations lower regulatory costs and improve freight carriers operations; enhanced deployments with additional commercial vehicle applications, such as real-time travel information to avoid delays and increase reliability can be cost-effective when incorporated into broader regional applications.
4. Reliability Enhancement – For freight carriers, reliability is directly related to capacity and levels of congestion. Congestion occurs at a corridor level, affecting both commercial carriers and the general traveling public, and is a function of highway or rail line capacity and restrictions that are presented by vertical or horizontal clearance for freight vehicles. Congestion also occurs in focused bottlenecks such as congested highway interchanges, intermodal yards, or "last-mile" access to major freight generators or intermodal facilities such as ports. Of the various freight improvement strategies, reliability enhancement driven by increase capacity is generally the most expensive and time-consuming to implement.

Based on these considerations, **Table 6.2** offers a set of prioritized improvement strategies and a set of high priority projects to implement those strategies.

Table 6.2: 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** (most in MDOT STIP/ Preliminary Prioritization List). **Widen I-20 in Jackson and Meridian areas** (MDOT Preliminary Prioritization List). **Widen and repave I-55 in Jackson and Hernando** (MDOT STIP/ Preliminary Prioritization List & MULTIPLAN 2035). **Widen and repave US 49: I-10 to US 90; I-20 to Star**; **School Rd to O'Neal Rd in Gulfport** (MDOT Preliminary Prioritization List). 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.

6.4 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.

With recognition that detailed alternatives development, cost estimates and economic analysis of the proposed improvement projects and strategies will not be included in the MSFP due to the high and broad planning level of the MSFP recommendations, the implementation plan will describe how the MSFP will improve the ability of the state to meet national freight goals established under section 167 of title 23, United States Code and will also show evidence of consideration of innovative technologies and

operational strategies, including intelligent transportation systems, that improve safety and efficiency of freight movement. And consistent with federal guidance, the implementation plan will establish MDOT's efforts to expand system performance monitoring to track freight system performance as part of a multimodal program.

Reflecting this overview, the implementation element of the MSFP reflects the following elements:

1. consistency with and support for federal freight policy goals
2. coordination with other transportation plans
3. commitment to continuing coordination with key industries and freight stakeholders
4. identification of key freight policies and program enhancements
5. identification of potential freight funding
6. ongoing monitoring of freight system performance
7. timing of short and long-range implementation activities

Each of these elements is discussed below.

6.4.1 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 6.3** provides MDOT's expectations for its response to and support of the national freight policy goals.

Table 6.3 - Mississippi Freight Plan Support of National Freight Policy Goals	
National Freight Policy Goal	Mississippi Statewide Freight Plan Response
Enhancing economic efficiency, productivity, and competitiveness	*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.*
Reducing congestion on the freight transportation system	*MSFP assessment has identified congested corridors and bottlenecks and has infrastructure improvements and operational enhancements to address that congestion.*
Improving freight system safety, security, and resilience	*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.*
Improving freight system state of good repair	*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.*
Using advanced technology, performance management, innovation, competition, and accountability in operating and maintaining the freight network	*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.*
Reducing adverse environmental and community impacts of the freight system	*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.*

6.4.2 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.

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 is currently in the early stages of updating the statewide transportation plan; the previous update identified key freight corridors, but did not formalize identification of the core freight network (MFN) or include focused evaluation of the performance of those corridors. MDOT will utilize the analyses and recommendations of the freight plan to incorporate an enhanced freight element in the new statewide plan.
- MDOT Modal Plans – MDOT's modal units are responsible for preparing detailed modal plans, to guide programmatic improvement to systems plans such as the state aviation, rail, or ports plans. MDOT will initiate its latest update of the State Rail Plan in 2015. Findings of this multimodal state freight plan will be used to update rail system analyses and to ensure that rail plan recommendations are consistent with those of the MSFP.
- Regional transportation plans – Mississippi's major urban areas (Jackson, Hattiesburg, Gulf Coast, and Memphis/Desoto County), in coordination with MDOT, are responsible under federal metropolitan transportation planning rules for adopting multimodal transportation plans to establish policies and guide transportation investment. MDOT intends to ensure that the findings of the MSFP are considered as key transportation elements as regional plans are updated in the future.

6.4.3 Commitment to Continuing Coordination with Key Industries

Preparation of this state freight plan was greatly aided by input received from the Freight Advisory Committee created for the study. The FAC brought 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. The FAC helped to identify specific freight issues and opportunities, and aided in refinement of the goals and objectives for freight systems and of the performance measures by which the freight system would be monitored.

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 anticipates that members of the FAC will provide the basis for gaining input into updating the State Rail Plan and various modal plans.

Moving to extend the FAC availability, 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 with a focus on areas that address freight industry needs:

- state and federal performance measures
- insights on existing and identification of new MS Freight Network corridors
- 'hot' freight topics – National Freight Network, MS Freight Network, State and Federal funding and legislation, new projects
- continued involvement with MSFP efforts: updates and outreach

6.4.4 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 attempted to define 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.

As a first freight-related policy stemming from this freight plan, 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. Often, these intermodal connectors are not elements of the national highway network or even of Mississippi's secondary highway network, but are county or municipally-maintained roads or streets. Congestion or operating restrictions can adversely affect freight movement reliability and public safety.

In previous years, MDOT had a program to allocate National Highway System funds for intermodal connector improvements through its Intermodal Connector Improvement Program (ICIP). Under this

program, connector improvements could be made available at the discretion of the Mississippi Transportation Commission. As an element of the MSFP, it is recommended that MDOT consider re-establishing the ICIP 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's traffic and operations units:

- Work through the Freight Advisory Committee to 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, through multiple media, to improve routing decisions and maximize capacity on the existing networks.
- Integrate freight management solutions into existing traffic management centers.

6.4.5 Freight Funding

As has been documented in this freight plan, Mississippi's freight systems are operating at reasonable levels and do not have demonstrated major deficiencies. Shippers have a variety of port options for transshipment of water-borne freight; the state has ample interstate highway serving major freight generating and warehousing/distribution centers; and with five Class 1 railroads, most markets benefit from rail service, in many cases with competing carriers.

However, 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. Fortunately, congestion on the state highway system, and particularly on the primary facilities of the MFN corridors, is relatively isolated, with the more significant levels of congestion occurring in the I-10 corridor along the Gulf Coast and in the Jackson area; but this congestion is largely restricted to the peak travel periods, allowing truckers to schedule travel to avoid excess delay.

Those infrastructure issues do carry a price tag. As described in Chapter 2, MDOT and the Mississippi Development Authority (MDA) do make funds available for freight projects. While MDOT does not have any dedicated freight funding for its highway program, the department does fund non-highway system

improvements through its Multimodal Transportation Improvement Fund (MTIF). Capital improvements at ports, airports, and publicly owned railways are funded through the MTIF.

At MDA (through its Financial Resources Division), a variety of incentive programs (including loans, grants, and other programs) are available to assist local governments with infrastructure development. MDA programs can fund freight infrastructure improvements through revolving loan programs, local government grant programs, and others described in Chapter 2, all focused on spurring economic development in the state.

Large infrastructure projects may also qualify for funding through the Mississippi Major Economic Impact Authority (MMEIA), also administered by the MDA. Unique in the nation, this program allows the State to issue general obligation bonds to assist local communities that need to meet development requirements of large capital projects. The MMEIA is designed to allow the State to assist local communities in meeting the development requirements inherent in large capital projects, thereby generating an investment in the quality of life in such communities.

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. Re-establishing the Intermodal Connector Improvement Program (ICIP) would allow MDOT to address off-system roadway improvements, but MDA's grant and loan programs serve similar purposes. 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.

6.4.6 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. The various federal modal administrations are working closely with states to advance performance monitoring of national transportation systems, such as the National Highway System.

As established in this freight plan, it is important to the state of Mississippi that its freight system operates efficiently and safely. Accordingly, it is the intent of MDOT to refine its current transportation performance monitoring system to incorporate performance measures established in this plan.

6.4.7 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

Appendix A: Major Freight-Relevant Funding Programs Administered by MDA

Major Freight-Relevant Funding Programs Administered by MDA		
Program Type	**Program Name**	**Examples of Eligible Projects**
Grants	CDBG Program for Economic Development	Roads, bridges, and rail spurs
	CDBG for Public Facilities Projects	Roads and bridges
	Development Infrastructure Grant Program (DIP)	• Transportation facilities directly affecting the site, including roads, bridges, rail lines or pipelines • Land Improvements • Marine Structures • Energy facilities (Power Generation & Distribution)
	Economic Development Highway Grant Program (EDH)	• State highways • City and county roads • Interchanges • Bridges
	Small Municipal and Limited Population Counties Grant Program	• Public facilities and infrastructure needs
	The Rural Impact Grant Fund	• Transportation facilities directly affecting the site, including roads, bridges, rail lines or pipelines • Land Improvements • Marine Structures • Energy facilities (Power Generation & Distribution)
	Mississippi Rail Grant Program	• Fixtures • Machinery • Equipment • Buildings
Loans	Agribusiness Enterprise Loan Program (ABE)	Equipment
	Airport Revitalization Revolving Loan Program	• Equipment for airport operation • Land improvements • Roads, bridges, rail spurs and runways • Buildings

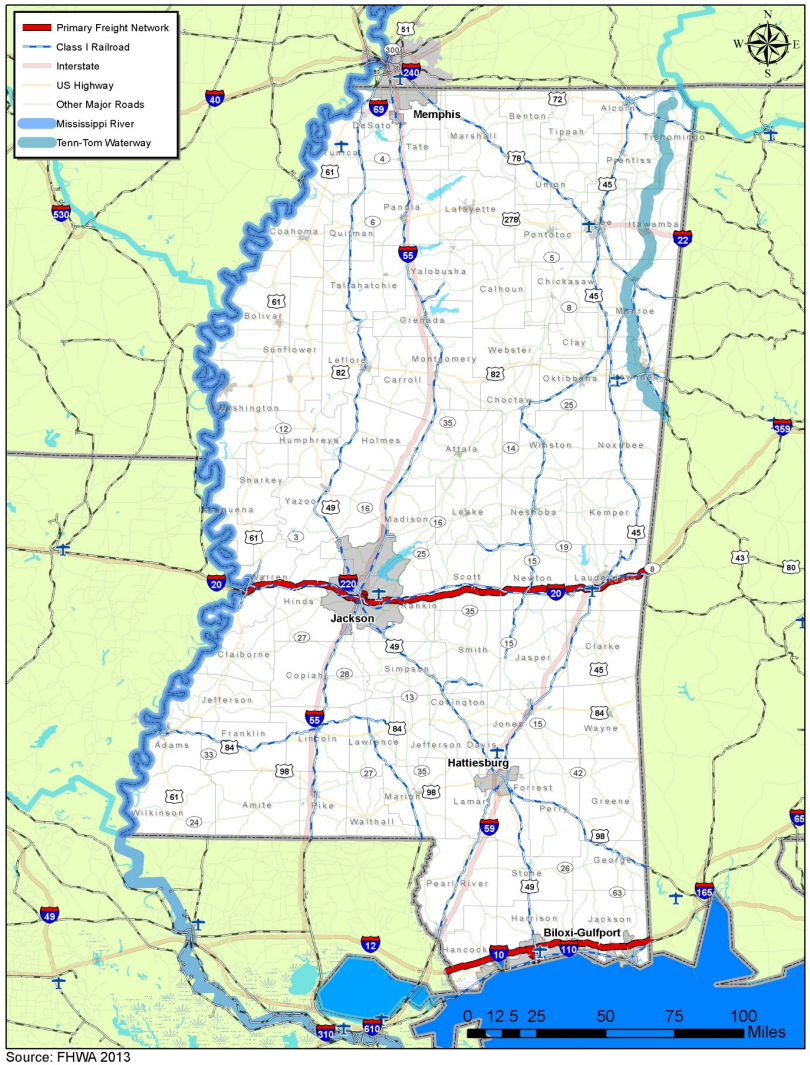
Major Freight-Relevant Funding Programs Administered by MDA		
Program Type	**Program Name**	**Examples of Eligible Projects**
	Business Incubator Loan Program	• Land improvements • Machinery and Equipment
	Capital Improvements Revolving Loan Program (CAP)	• Land improvements • Roads, bridges, rail spurs
	Existing Industry Productivity Loan Program	• Land Improvements • Equipment
	Freight Rail Service Revolving Loan Program	• Fixtures • Machinery • Equipment • Buildings
	Port Revitalization Revolving Loan Program	• Marine structures • Equipment necessary for port operation • Land improvements • Dock and channel sites to include dredging • Roads, bridges, and rail spurs • Buildings
Other (not solely administered by MDA)	Appalachian Regional Commission (ARC)	Funds transportation infrastructure projects to facilitate economic development needs in the 24 ARC counties.
	Delta Regional Authority (DRA)	Funds transportation infrastructure projects to facilitate economic development needs in the 45 DRA counties.
	Mississippi Business Finance Corporation (MBFC)	General obligation bonds for the purpose of acquiring publicly owned land, buildings, and infrastructure for: • Manufacturers • Warehouses and distribution centers • Research and development facilities • Telecommunications and data processing facilities • National or regional headquarters

Source: Mississippi Development Authority

Appendix B: Mississippi Freight Network Corridor Identification Maps

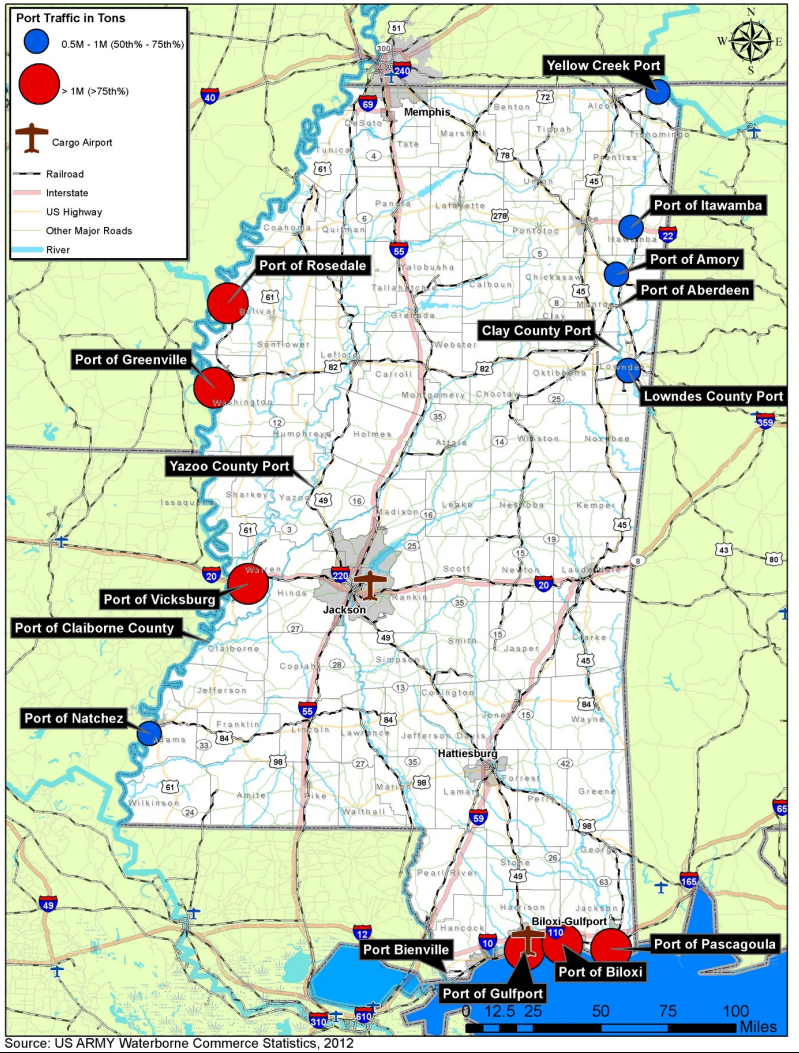
The MFN development included identification and mapping of Mississippi transportation systems and facilities corresponding to each of the identifying MFN criteria. A map set corresponding to MFN identification criteria listed above is shown in **Figures B.1** through **B.8**.

Key aspects in applying the designated criteria included providing interstate connectivity; providing access to key intermodal freight facilities and freight generators; and efficiently moving high volumes of freight to support the state's economic health.



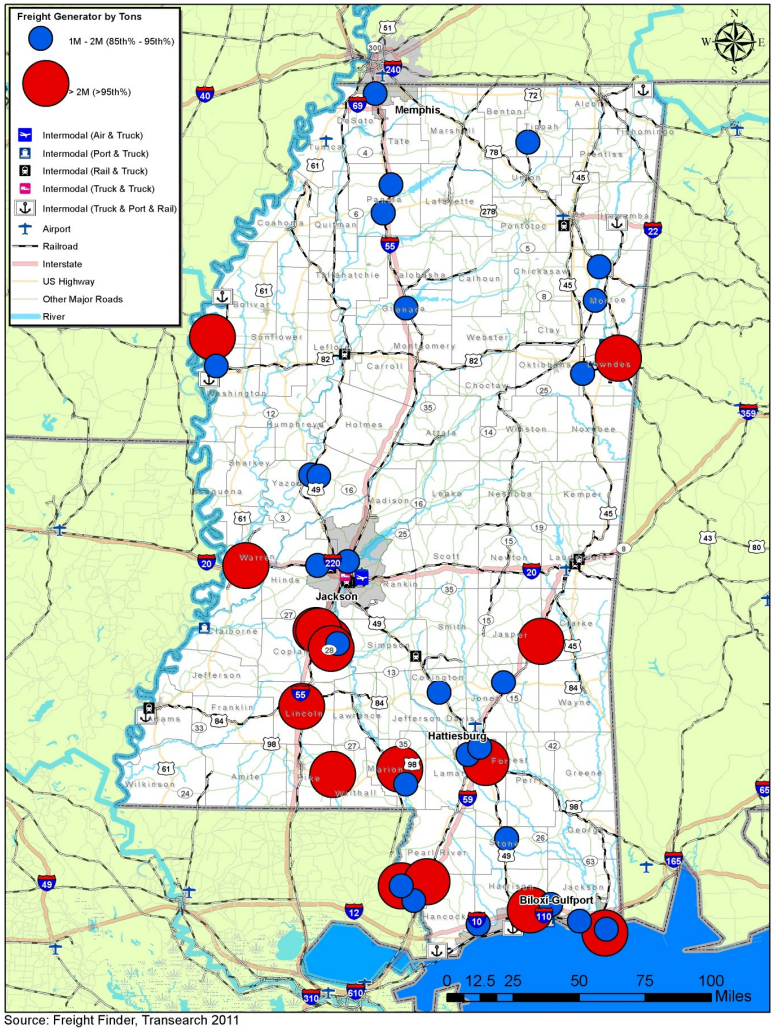
Source: FHWA 2013

MDOT MISSISSIPPI DEPARTMENT OF TRANSPORTATION	MISSISSIPPI STATEWIDE FREIGHT PLAN	Figure B.1 National Primary Freight Network



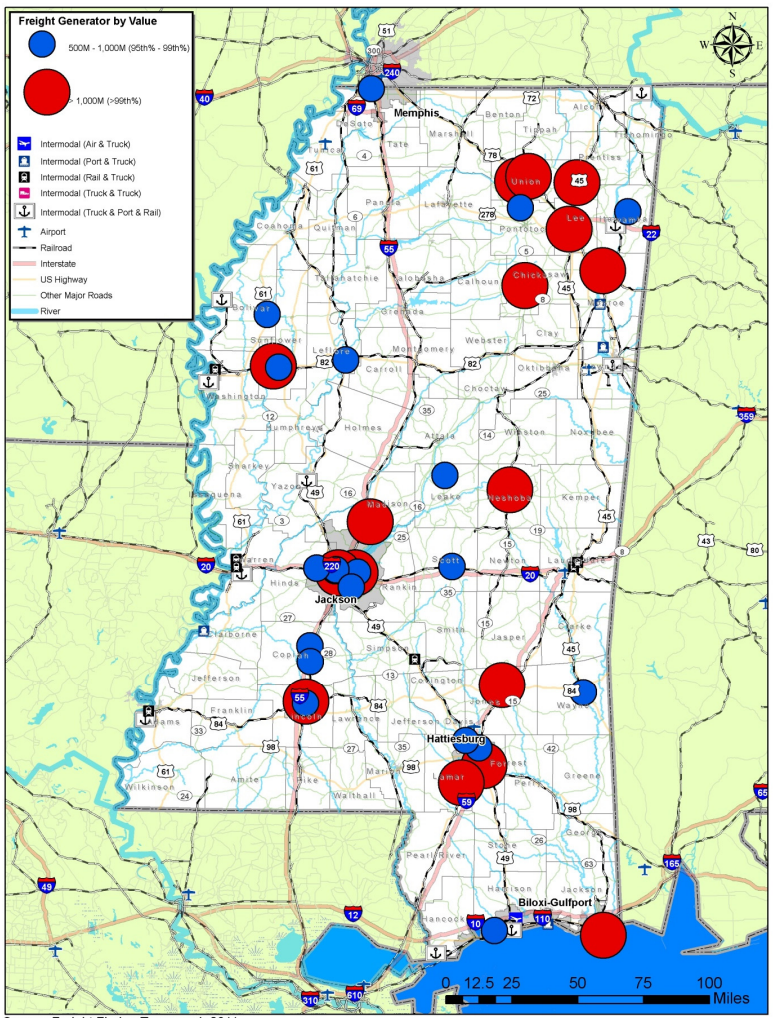
Source: US ARMY Waterborne Commerce Statistics, 2012

MDOT MISSISSIPPI DEPARTMENT OF TRANSPORTATION	MISSISSIPPI STATEWIDE FREIGHT PLAN	Figure B.2 Mississippi Gulf and River Port Traffic



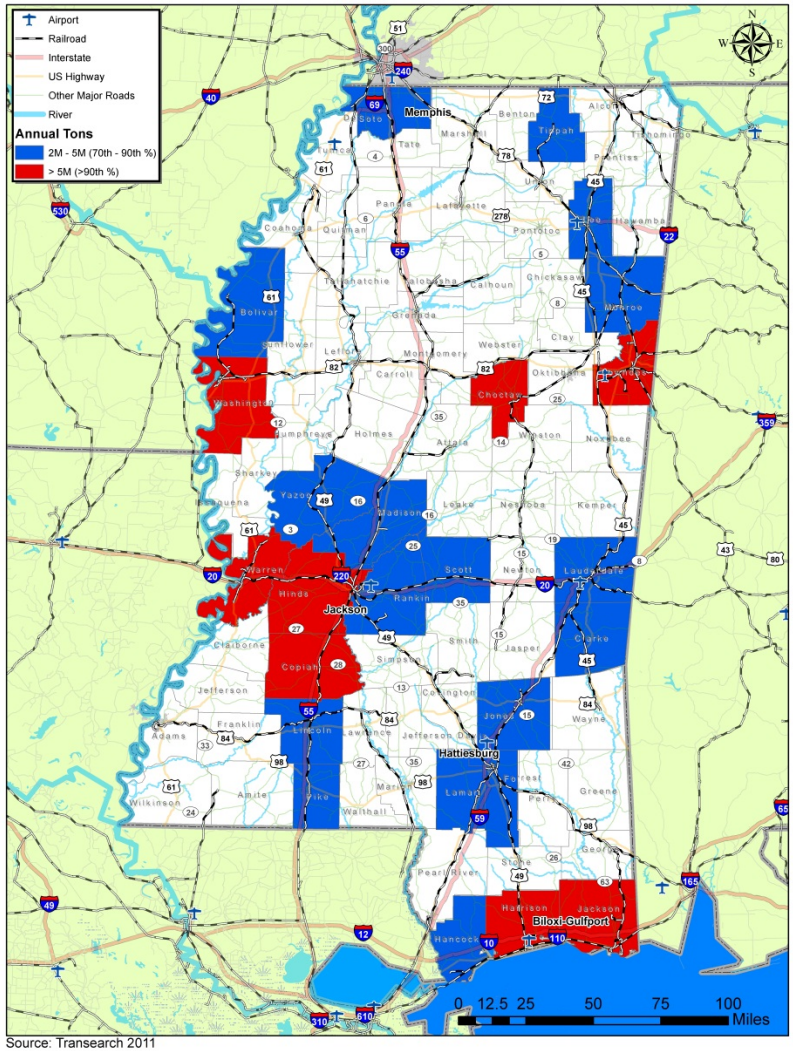
Source: Freight Finder, Transearch 2011

MDOT MISSISSIPPI DEPARTMENT OF TRANSPORTATION	MISSISSIPPI STATEWIDE FREIGHT PLAN	Figure B.3 Largest Freight Generators, Annual Tonnage



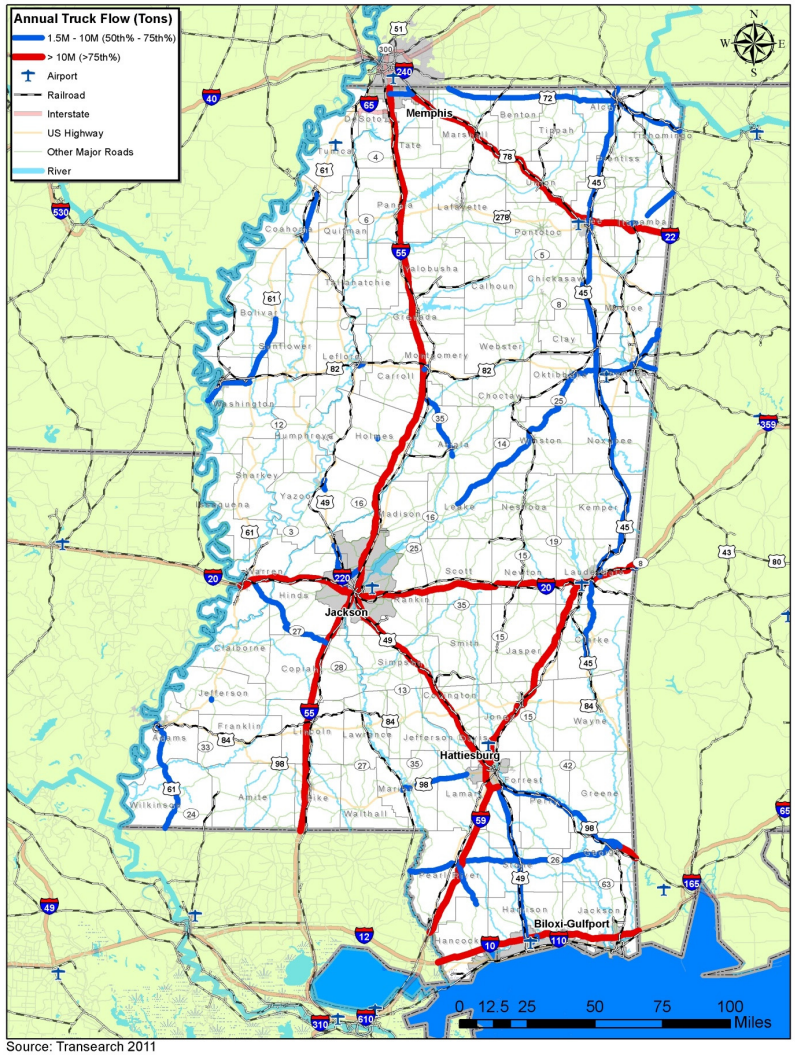
Source: Freight Finder, Transearch 2011

MDOT MISSISSIPPI DEPARTMENT OF TRANSPORTATION	MISSISSIPPI STATEWIDE FREIGHT PLAN	Figure B.4 Largest Freight Generators, Annual Value



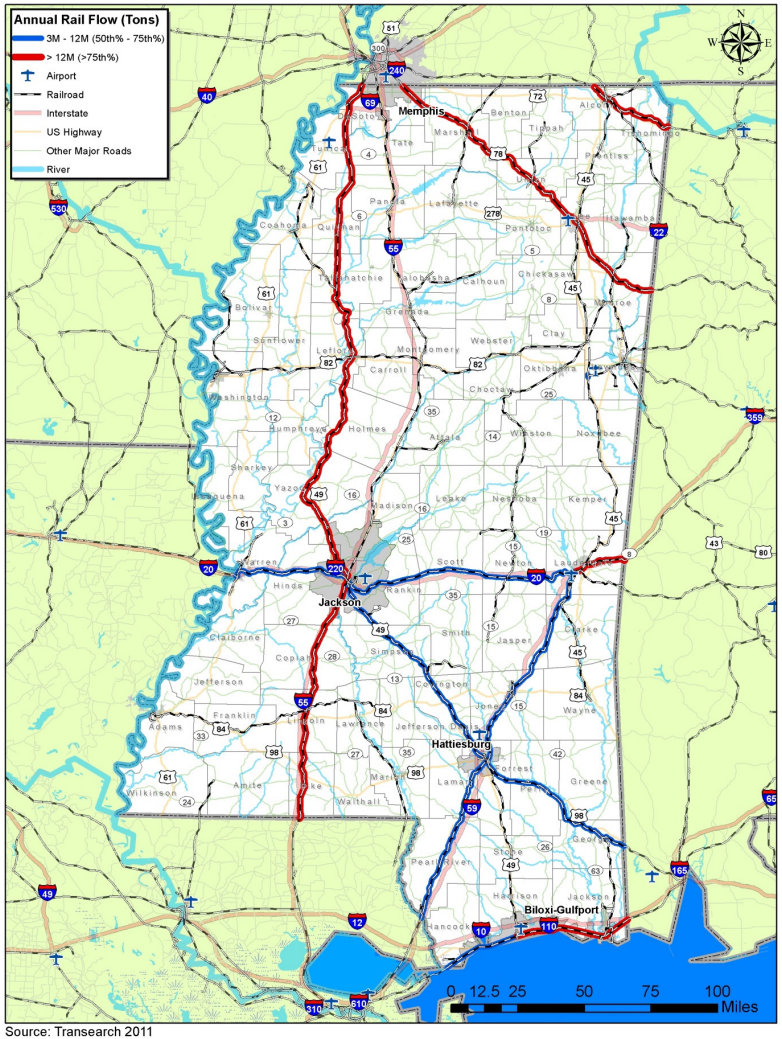
Source: Transearch 2011

MDOT MISSISSIPPI DEPARTMENT OF TRANSPORTATION	MISSISSIPPI STATEWIDE FREIGHT PLAN	Figure B.5 Principal Freight Generating Counties, Annual Tons



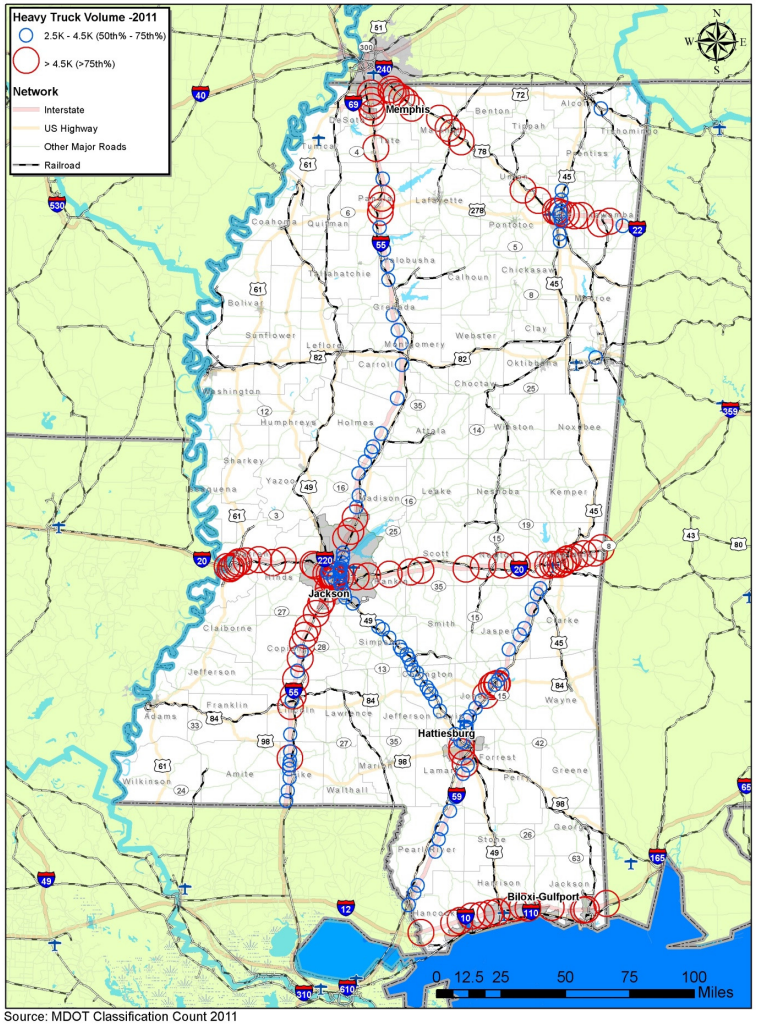
Source: Transearch 2011

MDOT MISSISSIPPI DEPARTMENT OF TRANSPORTATION	MISSISSIPPI STATEWIDE FREIGHT PLAN	Figure B.6 Annual Mississippi Freight Truck Flow, Tons



Source: Transearch 2011

MDOT MISSISSIPPI DEPARTMENT OF TRANSPORTATION	MISSISSIPPI STATEWIDE FREIGHT PLAN	Figure B.7 Annual Rail Freight Flow, Tons



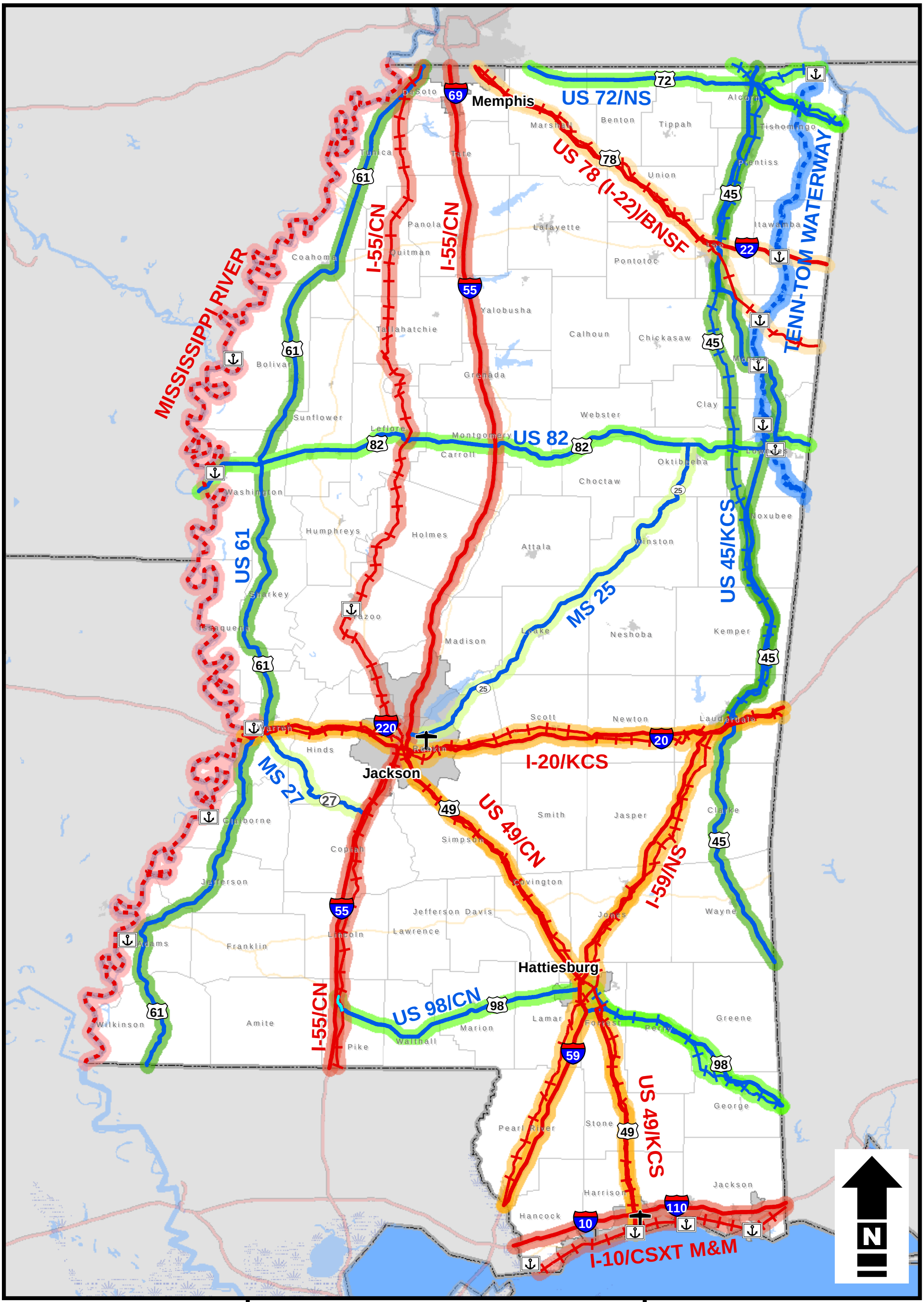
Source: MDOT Classification Count 2011

MDOT MISSISSIPPI DEPARTMENT OF TRANSPORTATION	MISSISSIPPI STATEWIDE FREIGHT PLAN	Figure B.8 Truck Volumes, Average Daily Volume

Appendix C: Mississippi Freight Network Corridor Assessments

Corridor Assessment Notes
(1) FHWA/ATRI Nationwide Bottleneck Analysis
(2) MSFP Freight Advisory Committee input and Freight User Survey Bottleneck Identification
(3) Major freight generators move over 1 million tons or $200 million in value
(4) Undesired Level of Service defined as below LOS C in rural areas and below LOS D for urban areas
(5) Capacity includes the total storage space for air cargo, ramp space and capacity in tonnage; volume refers to cargo volumes in tonnage.
(6) Crash rate greater than 80% of state average for Tier I and 100% for Tier II
(7) Criteria applies to all public road crossings with active crossing warning devices (gates and warning signals for Tier I and Tier II crossings)
(8) Pavement condition is satisfactory if IRI rating on 75% of primary route miles < 95 for Tier I and 65% < 95 for Tier II
(9) Tier I: all core track meets or exceeds FRA Class 4 standards (>40 mph for freight, > 60 mph for passenger); Tier II: 80% of core track meets or exceeds FRA Class 3 standards (>25 mph for freight, >30 mph for passenger; no signals)

* Tonnage excludes through freight



MISSISSIPPI STATEWIDE FREIGHT PLAN

MDOT
MISSISSIPPI DEPARTMENT OF TRANSPORTATION

LEGEND

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

Source: ESRI, MDOT.

MISSISSIPPI FREIGHT NETWORK CORRIDORS

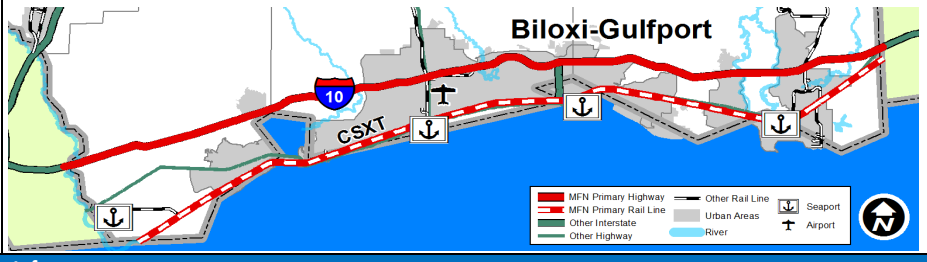
FIGURE C.1

Tier I: I-10 / CSXT (Gulf Coast) Corridor

General Description

The Gulf Coast Corridor covers southern Mississippi, including two of the top five most populated counties in the state, Harrison and Jackson. The three counties in the corridor account for 13% of both population and employment in MS. The five leading employment sectors in the corridor include government, food services, retail trade, manufacturing, and construction. Northrop Grumman Ship Systems, the state's largest employer with over 13,000 employees, is located in this corridor. The corridor serves three major Gulf Coast ports, including two deep water ports: Pascagoula and Gulfport. Truck freight is the dominant mode in the corridor and is expected to grow from 61% of total freight in 2011 to 65% in 2040. The Gulf Coast Corridor includes two major highways, I-10 and US 90 between the Louisiana and Alabama borders. The major intersecting highways are US 49 in Pascagoula (connection to Jackson-Hattiesburg-Gulfport Corridor) and MS 63 in Gulfport. The major rail mainline is the CSXT M&M subdivision, parallel to I-10. Freight flows to and from Mississippi along this corridor reflect important industry segments along the Gulf Coast, chemicals and petroleum.

Corridor Map



Corridor Freight Infrastructure

	Highway	Rail	Ports & Waterways	Commercial Airports
Primary Facilities / Operators	I-10 from Louisiana border to Alabama border (78 miles)	CSXT M&M Subdivision mainline from Louisiana border to Alabama border that parallels the Gulf Coast (74 miles)	Port of Gulfport, Port of Pascagoula, Port of Bienville	Gulfport-Biloxi International Airport
Key Connectors	I-110 from I-10 to Biloxi	CSXT connection to Chevron Pascagoula Refinery and Mississippi Phosphates	To Port of Gulfport from I-10 via US 90: south on port access road (NHS Intermodal Connector)	US 49 and Airport Rd / 34th Street in Gulfport connecting I-10 to Gulfport-Biloxi International Airport (NHS Intermodal Connector)
	US 49 connecting I-10 to US 90 at Port of Gulfport. (US 49 is also a Tier I corridor, projects captured in US 49 corridor profile)	KCS Hattiesburg to Gulfport mainline's branch to DuPont and Bayou Concrete Plant	To Port of Gulfport from I-10 via US 90: West Pier Gate to 27th Avenue (NHS Intermodal Connector)	
	MS 63 connecting I-10 to Chevron Pascagoula Refinery and Mississippi Phosphates	Mississippi Export Railroad (MSE) - connecting CN and east-west CSXT M&M subdivision	To Port of Pascagoula (east) via I-90: south on MS 611 (NHS Intermodal Connector)	
	MS 57 between I-10 and US 90 / Mallette Brothers Construction Co	Port Bienville Railroad (PBVR) - serving Port Bienville Industrial Park	To Port of Pascagoula (west) via US 90: south on MS 617 to MS 619, east on River Edge Rd (NHS Intermodal Connector)	
	MS 609/Tucker Road between I-10 and Daisy Vestry Road to Allied Waste Svc		To Port of Bienville from I-10 via US 90/MS 607, southwest on US 90, south on Ansley Rd (NHS Intermodal Connector)	
	Kiln Delisle Road (Pass Christian) between I-10 and DuPont Plant			
Existing ITS Deployments	WIM PrePass Gulf Region Incident Management System: - CCTV cameras - Dynamic Message Signs			

Freight Flow Characteristics

		Highway	Rail	Ports & Waterways	Commercial Airports
Annual Freight: Tonnage (millions) / Value ($ billions)	2011	60.9 / $117.3	16.4 / $27.6	23.0 / $14.3	< 1 / < $0.1
	2040	91.7 / $243.5	24.1 / $50.7	25.2 / $13.4	< 1 / < $0.1
Annual Inbound/ Outbound/ Intrastate: Tonnage (millions)*	2011	33.0 / 18.5 / 3.4			
	2040	38.5 / 20.1 / 5.7			
Annual Inbound/ Outbound/ Intrastate: Value ($ billions)*	2011	$27.2 / $22.2 / $3.4			
	2040	$39.1 / $25.5 / $4.7			
% Freight Flows by Mode	2011	61%	16%	23%	< 1%
	2040	65%	17%	18%	< 1%
Average % Truck Mix / Average Total Daily Volume	2011	14% / 47,400			
Major Bottlenecks as identified	ATRI (1)	None			
	FAC / Freight User Survey (2)	I-10: Pascagoula River bridge (from Exit 61 to 68)	None identified	None identified	None identified
Top Commodities	Tonnage	Chemicals Petroleum, Coal Minerals, Crude petrol Gas, Secondary Traffic Others, Food Tobacco, and Concrete Glass Primary Metal			
	Value	Chemicals Petroleum, Fabricated Metal Machinery Equipment, Concrete Glass Primary Metal, Secondary Traffic Others, and Food Tobacco			
Major Freight Generators	Tonnage (3)	Chevron Pascagoula Refinery, Holden Earth Moving & Construction, Mississippi Phosphates Corp, Du Pont, Mallette Brothers Construction Co, Allied Waste Svc			
Top 10 Statewide Freight Counties Served		Jackson, Harrison			

Corridor Infrastructure Performance

		Highway	Rail	Ports & Waterways	Commercial Airports
Capacity: Highways: Level of Service (4) Rail: % supporting 286k weight limits Ports: channel depth Commercial airports: storage volume to capacity (5)	2011	15 miles (19%) congested: - Exit 24 (Firetower Rd) to Exit 28 (County Farm Rd) - Exit 50 (Washington Ave) to Exit 68 (MS 613)	100% of CSX M&M Subdivision supports 286k	Authorized channel depth vs actual depth	64% in 2008 (MSGM&TS)
	2040	72 miles (93%) congested: - Exit 2 (LA Stateline) to Exit 28 (County Farm Rd) - Exit 31 (Canal Rd) to Exit 45 (I 110) - Exit 50 (Washington Ave) to Exit 75 (AL Stateline)			
Safety: Highways: Annual Crash Rate (174/100M vmt) (6) Rail: RR crossings w/o active warning devices (7)		Crash rate: 75 8 miles (10%) across the corridor with high crash segments.	35 crossings of 72 (49%) do not have Active 2 warning devices.		
Infrastructure Condition: Highways: Pavement & Structures Rail: Speed/Track (9)	IRI rating (8)	IRI score: 95% 4 miles (5%) of I-10 unacceptable. High IRI > 95 segments: - From Louisiana Stateline to Shuttle Pkwy/Exit 1 - From US 49/Exit 34 to Shriners Blvd/Exit 41 - Entire I-110 connector unacceptable	100% of track meets freight rail speed standards		
	Vertical clearance	1 of 9 bridges (11%) deficient			
	Weight-restricted bridges	0 of 66 (0%) restricted			

Corridor Needs Assessment and Infrastructure Need

	Highway	Rail	Ports & Waterways	Commercial Airports
Performance Assessment	**Level of Service**: Today I-10 provides acceptable LOS outside of a few short congested segments (most notably I-10/US 49 interchange), but is forecast to experience growing congestion and delay along the entire corridor by 2040. Portions of I-10 have been widened but more capacity expansion is needed to accommodate freight and passenger travel demand. Additional capacity improvements are needed on I-110 given its high congestion levels. **Safety**: I-10 overall is a safe highway corridor. **Operations**: ITS deployments contribute to relatively smooth corridor operations today. **Physical Condition**: Only a few I-10 miles are unacceptable with capacity rather than condition posing more challenges. Low vertical clearance might impact interstate freight flows at one bridge location. **Primary Access Routes**: I-110 pavement condition is unacceptable.	**Capacity**: The CSXT mainline and key connectors within the corridor can all handle 286k weight limit. **Safety**: Half of the railroad crossings on the CSXT mainline do not have Active 2 warning devices. **Physical Condition**: CSXT mainline track meets freight rail speed standards.	For MS Gulf Coast ports to remain competitive, need for new or improved last-mile access roads to ports, with particular focus on physical and operating conditions at the 6 existing and 1 proposed NHS Intermodal Connectors.	Last-mile roadway access improvements can improve freight flows in and out of Gulfport-Biloxi International Airport. V/C need to be maintained below 100% to avoid capacity shortfall - currently GPT comfortably meets the criteria.
Potential Freight Improvement Projects	I-10: add 2 lanes each direction for entire length (MDOT STIP/Preliminary Priority List). I-10/I-110 and I-10/US 49 interchanges: capacity and interchange improvements. I-110: pavement reconstruction. I-110: construct new interchanges at Stewart Rd, Old Fort Bayou Rd, and Stone crest Rd (Gulf Coast MTP). Construct East Harrison County connector (from US 90 to I-10) to enhance freight access (MDOT Preliminary Priority List). Raise I-10 bridges (1) to provide 16' clearance. Finalize deployment of the Gulf Region Incident Management System ITS improvements along the Gulf Coast.	Improve operating speeds, reliability, and safety along the CSXT mainline: upgrade warning devices with signals and gates in Biloxi: crossings at Iroquois, Seal, Magnolia, and Nixon; and Long Beach: crossing at N. Lang Ave. (MS State Rail Plan). Upgrade all public corridor crossings along the CSXT mainline with Active 2 warning devices.	Construct new road access to Port of Gulfport : from I-10 via MS 601/Canal Rd - to Port of Gulfport (MULTIPLAN 2035). Consider and prioritize improvements to the identified corridor NHS connectors in highway project programming due to their role in providing roadway access to ports. Replace CSXT bridge over Pearl River - access to Port of Bienville (MS State Rail Plan).	None identified

Notes:

(1) FHWA/ATRI Nationwide Bottleneck Analysis

(2) MS Freight Advisory Committee input and Freight User Survey Bottleneck Identification

(3) Major freight generators move over 1 million tons or $200 million in value

(4) Undesired Level of Service defined as below LOS C in rural areas and below LOS D for urban areas.

(5) Capacity includes the total storage space for air cargo, ramp space and capacity in tonnage. Volume refers to cargo volumes in tonnage.

**** Excludes through freight***

(6) Crash rate greater than 80% of state average for Tier I and 100% for Tier II

(7) Criteria applies to all public road crossings with active crossing warning devices (gates and warning signals for Tier I and Tier II crossings).

(8) Pavement condition is satisfactory if IRI rating on 65% of primary route miles < 95 for Tier I and 60% < 95 for Tier II.

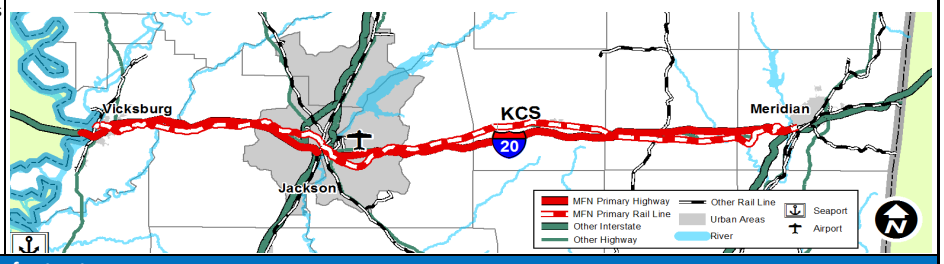
(9) Tier I: all core track meets or exceeds FRA Class 4 standards (> 40 mph for freight, > 60 mph for passenger).
Tier II: 80% of core track meets or exceeds FRA Class 3 standards (> 25 mph for freight, > 30 mph for passenger; no signals).

Tier I: I-20 / KCS (Vicksburg-Jackson-Meridian) Corridor

General Description

The I-20 / KCS Corridor runs east-west across the state along I-20. Of all MFN corridors, the Vicksburg-Jackson-Meridian Corridor is projected to experience the largest percentage increase in annual freight flows until 2040. The corridor spans six counties in Mississippi between the Louisiana border near Vicksburg and Alabama and includes two of the top five most populated counties in the state, Hinds and Rankin. The six counties accounted for 19% of the total state population and 23% of total employment in 2013. The primary east-west highways within the corridor are I-20 and US 80. The corridor includes the KCS rail line running parallel to I-20. The Meridian Speedway extends 320 miles from Meridian to Shreveport, Louisiana. The Port of Vicksburg is the corridor's primary river port, located at the confluence of the Mississippi and Yazoo rivers. Jackson-Evers International Airport is the commercial airports serving the Vicksburg-Jackson-Meridian Corridor. The corridor freight flows are expected to grow at annual rate of 1.6% until 2040. Truck and rail freight dominate the total corridor freight tonnage. Truck mode is expected to grow from 47% in 2011 to 52% in 2040. The primary commodities shipped in the corridor are chemicals, petroleum, and coal.

Corridor Map



Corridor Freight Infrastructure

	Highway	Rail	Ports & Waterways	Commercial Airports
Primary Facilities / Operators	I-20 from Louisiana border to Meridian (141 miles)	KCS mainline (Meridian Speedway) from Louisiana border to Meridian, parallel to I-20 (138 miles)	Port of Vicksburg	Jackson International Airport
Key Connectors	I-220 between I-55 and I-20 in Jackson	Mississippi Southern Railroad (MMS) from junction with KCS at Newton to Bay Springs	To Port of Vicksburg : from I-20, west on Clay St, Cherry St, & 1st East St, north on Washington, west on Haining Rd, and northwest on Industrial Dr to port (NHS Intermodal Connector)	MS 475 / Airport Rd (north) connecting I-20 to Jackson International Airport (NHS Intermodal Connector)
	US 51 between I-55 and I-20	Meridian and Bigbee Railroad (MNBR) - 145-mile line bridges the Alabama-Mississippi state line and provides direct connections with major carriers: KCS, NS, CSXT, and BNSF.		
	MS 27 between US 80 and I-20 (MS 27 is also its own Tier II corridor)	Vicksburg Southern Railroad (VSOR) - connection to Port of Vicksburg		
Existing ITS Deployments	WIM; PrePass; Jackson Metro Incident Management I / Hurricane Response Project: - CCTV cameras - Dynamic Message Signs Mississippi River I-20 bridge in Vicksburg ITS monitoring: - Surveillance cameras - Traffic volumes/speeds on approaches - Real Time River Current data sensors - Dynamic Message signs - Detour monitoring			

Freight Flow Characteristics

		Highway	Rail	Ports & Waterways	Commercial Airports
Annual Freight: Tonnage (millions) / Value ($ billions)	2011	45.0 / $78.1	48.1 / $55.5	3.4 / $1.8	< 1 / $1.6
	2040	80.3 / $166.6	69.9 / $101.2	3.2 / $1.2	< 1 / $4.4
Annual Inbound/ Outbound/ Intrastate: Tonnage (millions)*	2011	21.4 / 13.7 / 8.8			
	2040	29.5 / 22.4 / 13.5			
Annual Inbound/ Outbound/ Intrastate: Value ($ billions)*	2011	$22.2 / $21.4 / $4.6			
	2040	$41.6 / $43.5 / $7.2			
% Freight Flows by Mode	2011	47%	50%	3%	< 1%
	2040	52%	46%	2%	< 1%
Average % Truck Mix / Average Total Daily Volume	2011	21% / 28,700			
Major Bottlenecks as identified	ATRI (1)	I-55 at I-20 in Jackson I-59 at I-20 in Meridian			
	FAC / Freight User Survey (2)	I-59 at I-20 in Meridian I-20 at the Pearl River Bridge	None identified	None identified	None identified
Top Commodities	Tonnage	Chemicals Petroleum, Coal Minerals, Crude petrol Gas, Secondary Traffic Others, Food Tobacco, and Agriculture			
	Value	Chemicals Petroleum, Fabricated Metal Machinery Equipment, Secondary Traffic Others, Concrete Glass Primary Metal, and Misc Freight			
Major Freight Generators	Tonnage (3)	N Runyon WJ & Son Inc, Akzo Nobel Coatings Inc.			
Top 10 Statewide Freight Counties Served		Hinds, Warren, Rankin			

Corridor Infrastructure Performance

		Highway	Rail	Ports & Waterways	Commercial Airports
Capacity: Highways: Level of Service (4) Rail: % supporting 286k weight limits Ports: channel depth Commercial airports: storage volume to capacity (5)	2011	3 miles (2%) congested: - Exit 47 (US 49) to Exit 48 (S Pearson Rd) - Exit 40 (MS 18) to Exit 42 (Ellis Ave)	100% of KCS mainline supports 286k	Recovery time from flood or drought to 12' minimum depth	21% in 2008 (MSGM&TS)
	2040	64 miles (41%) congested: - Exit 1 (LA Stateline) to Exit 31 (Williamson Rd) - Exit 35 (Clinton Raymond Rd) to Exit 56 (W Government St) - Exit 59 (US 80) to Exit 68 (MS 43) - Exit 150 (US 11) to Exit 153 (Roebuck Dr)			
Safety: Highways: Annual Crash Rate (174/100M vmt) (6) Rail: RR crossings w/o active warning devices (7)		Crash rate: 104. 26 miles (17%) across the corridor with high crash segments.	20 crossings of 43 (47%) do not have Active 2 warning devices.		
Infrastructure Condition: Highways: Pavement & Structures Rail: Speed/Track (9)	IRI rating (8)	IRI score: 70% 41 miles (26%) unacceptable. High IRI > 95 segments: - US 61/Exit 5 to Brownsville Rd/Exit 27 - Springridge Rd/Exit 36 to Spearson Rd/Exit 48 - Blossom Hill Rd to Lake Norris Rd/Exit 96 - I-59/Exit 149 to US 11/Exit 154	100% of track meets freight rail speed standards.		
	Vertical clearance	11 of 80 bridges (14%) deficient			
	Weight-restricted bridges	0 of 143 (0%) restricted			

Corridor Needs Assessment and Infrastructure Need

	Highway	Rail	Ports & Waterways	Commercial Airports
Performance Assessment	**Level of Service**: I-20 provides acceptable LOS outside of a few congested segments in the Jackson area. ATRI identified the I-20/I-55 interchange as a major nationwide bottleneck, along with I-20/I-59 interchange in Meridian. Growing congestion is forecasted by 2040, with 41% of the corridor congested. I-20 west and east of Jackson is already in need of capacity and interchange improvements based on congestion analysis and also according to the FAC. No segments of I-20 are programmed to be widened. **Safety**: I-20 overall is a relatively safe highway corridor. **Operations**: The corridor is a significant national and regional freight link for through and regional freight, with freight destined for Jackson area and Meridian, and through freight travelling between northeastern states in the U.S. to Texas, New Orleans, and beyond. The recently implemented ITS bridge and detour monitoring across Mississippi River in Vicksburg increase truck volumes/speeds on approaches. **Physical Condition**: I-20 does not meet Tier I pavement condition criteria, with IRI rating better than 95 for less than 75% of primary route miles - 70%. 26% of I-20 pavement miles are unacceptable but overall condition is not an issue. Low vertical clearance might impact interstate freight flows, with 14% of I-20 bridges deficient.	**Capacity**: The KCS mainline handles 286k weight limit. **Safety**: Half of the railroad crossings on this busy freight rail corridor do not have Active 2 warning devices. **Physical Condition**: KCS mainline track meets freight rail speed standards.	I-20 via US 61 provides critical access to the Port of Vicksburg.	Last-mile roadway access improvements can improve freight flows in and out of Jackson International Airport. V/C need to be maintained below 100% to avoid capacity shortfall - currently Jackson airport comfortably meets the criteria.
Potential Freight Improvement Projects	I-20 widening projects: - Mississippi River west to Brownsville Rd/Exit 27 (MDOT Preliminary Priority List) - I-220 interchange to Pearl River Bridge (MDOT Preliminary Priority List) - I-59/Exit 149 to US 11/Exit 154 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.	KCS: rail crossings in Vicksburg at Crawford St and Depot St: upgrade warning devices with signals and gates (MS State Rail Plan). Upgrade all public corridor crossings along the KCS mainline with Active 2 warning devices.	None identified	None identified

Notes:

(1) FHWA/ATRI Nationwide Bottleneck Analysis

(2) MS Freight Advisory Committee input and Freight User Survey Bottleneck Identification

(3) Major freight generators move over 1 million tons or $200 million in value

(4) Undesired Level of Service defined as below LOS C in rural areas and below LOS D for urban areas.

(5) Capacity includes the total storage space for air cargo, ramp space and capacity in tonnage. Volume refers to cargo volumes in tonnage.

**** Excludes through freight***

(6) Crash rate greater than 80% of state average for Tier I and 100% for Tier II

(7) Criteria applies to all public road crossings with active crossing warning devices (gates and warning signals for Tier I and Tier II crossings).

(8) Pavement condition is satisfactory if IRI rating on 65% of primary route miles < 95 for Tier I and 60% < 95 for Tier II.

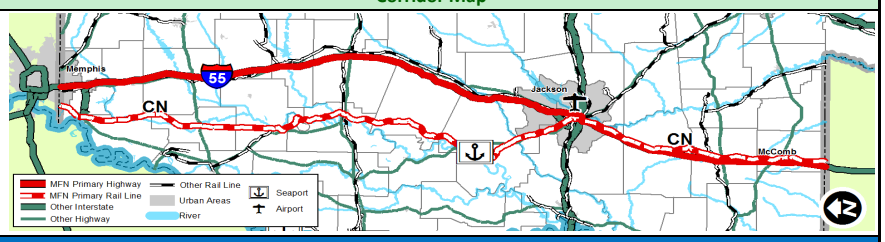
(9) Tier I: all core track meets or exceeds FRA Class 4 standards (> 40 mph for freight, > 60 mph for passenger).
Tier II: 80% of core track meets or exceeds FRA Class 3 standards (> 25 mph for freight, > 30 mph for passenger; no signals).

Tier I: I-55 / CN (Southaven-Jackson-McComb) Corridor

General Description

The I-55 / CN Corridor consists of 19 counties and includes Jackson, the largest city in Mississippi and its capital. One-third of Mississippi's population and available jobs are located within this corridor, particularly Hinds, Desoto, Madison, and Rankin counties that alone account for 66% of the total population within the corridor and 73% of its employment force. With the state capital located within the corridor, the government is the leading source of jobs. The I-55 / CN Corridor is the most heavily traveled freight corridor in Mississippi, with 139 million tons moved by truck or rail along the corridor's counties in 2011. Truck is the dominant freight mode in the corridor and is expected to grow from 58% share in 2011 to 65% in 2040. The rail share is expected to decline from 42% to 35%. To facilitate the freight flows, the corridor's major freight network elements include: Interstate 55 and US 49; the CN rail line; the Jackson and Memphis International Airports; and the Yazoo County Port served by CN rail line. The primary commodities shipped through the corridor are chemical petroleum products and coal.

Corridor Map



Corridor Freight Infrastructure

	Highway	Rail	Ports & Waterways	Commercial Airports
Primary Facilities / Operators	I-55 from Tennessee border to Louisiana border (290 miles).	CN mainline between Memphis and New Orleans, entering Mississippi near Memphis and exiting near McComb (305 miles)	Port of Yazoo	Jackson International Airport
Key Connectors	I-69 between I-55 and US 61	IC Railroad in Jackson connectors : -North Connector: from I-55 via N. Mill St, Woodrow Wilson to facility (NHS Intermodal Connector) -South Connector: from I-55 via Pearl/Pascagoula St to Mill St to facility (NHS Intermodal Connector)	To Port of Yazoo: from I-55 via MS 3, River Rd, and Levee Rd to port (NHS Intermodal Connector)	
	I-220 between I-55 and I-20 in Jackson			
	MS 27 between I-55 and Hopewell Road			
	MS 28 between I-55 and Bailey Road			
	MS 7 between I-55/ Grenada and Greenwood	The Grenada Railway, LLC (GRYR) from Tennessee state line to Canton (runs parallel to I-55)		
	MS 315 between US 51 and I-55	CN Class I line from Jackson to Canton (parallel to I-55)		
	US 278 between MS 35 and I-55			
	Paper Mill Road (Grenada) between Resolute Forest Products Plant and I-55			
	MS 6 / US 278 west of US 61 to I-55			
Existing ITS Deployments	WIM Jackson Metro Incident Management I / Hurricane Response Project: - CCTV cameras - Dynamic Message Signs Desoto County Incident Management Project: Phase 1: - CCTV cameras - Dynamic Message Signs			

Freight Flow Characteristics

		Highway	Rail	Ports & Waterways	Commercial Airports
Annual Freight: Tonnage (millions) / Value ($ billions)	2011	80.6 / $116.9	58.9 / $62.7	< 1 / < $1	< 1 / $1.6
	2040	134.7 / $216.1	71.0 / $115.2	< 1 / < $1	< 1 / $4.4
Annual Inbound/ Outbound/ Intrastate: Tonnage (millions)*	2011	22.0 / 17.6 / 15.7			
	2040	31.7 / 31.5 / 29.3			
Annual Inbound/ Outbound/ Intrastate: Value ($ billions)*	2011	$26.7 / $27.5 / $5.9			
	2040	$50.1 / $57.5 / $9.5			
% Freight Flows by Mode	2011	58%	42%	< 1%	< 1%
	2040	65%	35%	< 1%	< 1%
Average % Truck Mix / Average Total Daily Volume	2011	16% / 26,200			
Major Bottlenecks as identified	ATRI (1)	I-55 at I-20 in Jackson			
	FAC / Freight User Survey (2)	Tier I: I-55/I-20 interchange in Jackson I-55: between Ridgeland and Madison; between McDowell Rd and Savanna St. in Jackson MS 6 / US 278 west to US 61 from I-55/Batesville.	CN line from Jackson to Memphis via Grenada (short rail line parallel to I-55)	None identified	None identified
Top Commodities	Tonnage	Coal Minerals, Crude petrol Gas, Chemicals Petroleum, Food Tobacco, Secondary Traffic Others, and Agriculture			
	Value	Chemicals Petroleum, Fabricated Metal Machinery Equipment, Misc Freight, Food Tobacco, and Concrete Glass Primary Metal			
Major Freight Generators	Tonnage (3)	Oddee Smith & Sons Construction, Green Brothers Gravel Co, Krystal Gravel Co, Krystal Gravel Pit, Blain Sand & Gravel Inc, Hammett Gravel Co Inc, D & B Sand & Gravel Inc, Memphis Stone & Gravel, Smith Brothers Sand & Gravel, Eaton Corp, H H Petermann Jr Sand & Gravel, Resolute Forest Products, MMC Materials Inc.			
Top 10 Statewide Freight Counties Served		Hinds, Copiah, Rankin, Yazoo			

Corridor Infrastructure Performance

		Highway	Rail	Ports & Waterways	Commercial Airports
Capacity: Highways: Level of Service (4) Rail: % supporting 286k weight limits Ports: channel depth Commercial airports: storage volume to capacity (5)	2011	8 miles (3%) congested: - Exit 104 (I-220) to Exit 105 (Natchez Rd) - Exit 92 (E McDowell Rd) to Exit 98 (Lakeland Dr)	100% of CN mainline supports 286k	Recovery time from flood or drought to 12' minimum depth	21% in 2008 (MSGM&TS)
	2040	66 miles (23%) congested: - Exit 265 (E Main St) to Exit 287 (Church Rd) - Exit 91 (Wynndale Rd) to Exit 119 (W Peace St) - Exit 72 (MS 27) to Exit 78 (Green Gold Rd) - Exit 61 (MS 28) to Exit 65 (W Gellman)			
Safety: Highways: Annual Crash Rate (174/100M vmt) (6) Rail: RR crossings w/o active warning devices (7)		Crash rate: 109 38 miles (13%) across the corridor with high crash segments.	29 crossings of 81 (36%) do not have Active 2 warning devices		
Infrastructure Condition: Highways: Pavement & Structures Rail: Speed/Track (9)	IRI rating (8)	IRI score: 69% 90 miles (31%) unacceptable. High IRI > 95 segments: - E. Commerce St./Exit 280 to MS 740/Exit 263 - MS 35 N/Exit 245 to Exit 233 - MS 35/Exit 174 to MS 12/Exit 156 - I-220/Exit 104 to E. County Line Rd/Exit 103 - E Woodrow Wilson Ave/ Exit 98 to Green Gable Rd/Exit 78 - US 98/Exit 20 to MS 584/Exit 1	Does not meet track speed standards in Greenwood area and north of Jackson.		
	Vertical clearance	26 of 113 bridges (23%) deficient			
	Weight-restricted bridges	0 of 237 (0%) restricted			

Corridor Needs Assessment and Infrastructure Need

	Highway	Rail	Ports & Waterways	Commercial Airports
Performance Assessment	**Level of Service:** I-55 provides acceptable LOS outside of some congested segments in the Jackson area, notably its interchanges with I-20 and I-220. Growing congestion by 2040, with nearly one quarter of the corridor congested. Completion of the I-69/I-269 should relieve congestion in the southern Memphis area, especially west to US 61 from I-55/Batesville, identified by the FAC as a bottleneck. I-55 south and north of Jackson is in need of capacity and interchange improvements, based on congestion analysis. Portions of I-55 are programmed to be widened. This should alleviate congestion for both passenger and freight traffic, but more widening will be needed in the future to accommodate freight demand. **Safety:** I-55 overall is a relatively safe highway corridor. **Operations:** The corridor's extensive connectivity makes it a significant national link for through freight, with connections between Memphis, Jackson, and down to New Orleans. The percentage of trucks as a used freight mode in the corridor is forecasted to increase by 2040. The I-55/I-20 interchange is a critical interchange in the region, and is also identified as one of the top highway bottlenecks nationwide by ATRI. **Physical Condition:** The corridor does not meet Tier I pavement condition criteria, with IRI rating better than 95 for less than 75% of primary route miles - 69%. Condition of 31% of I-55 pavement miles is unacceptable - the most percentage of all Tier I Corridors, but overall capacity rather than condition is posing more challenges. Low vertical clearance might impact interstate freight flows, with 23% of I-55 bridges deficient.	**Capacity**: The CN mainline handles 286k weight limit. **Safety**: 36% the railroad crossings on this busy freight rail corridor do not have Active 2 warning devices, but the mainline does not intersect many busy highways since it does not run parallel to I-55. **Physical Condition**: FRA track speed standards are not met north of Jackson and in Greenwood area.	Last mile rail access to Port of Yazoo is an issue.	Last-mile roadway access improvements can improve freight flows in and out of Jackson International Airport. V/C need to be maintained below 100% to avoid capacity shortfall - currently Jackson airport comfortably meets the criteria.
Potential Freight Improvement Projects	I-55 - widening and repaving: - I-220/Exit 104 to E. County Line Rd/Exit 103 in Jackson - Hernando/Exit 283/I-269 to South Haven/TN State Line (MDOT STIP / Preliminary Priority List & MULTIPLAN 2035) Raise I-55 bridges (26) to meet 16' clearance performance standard. Leverage Desoto County Incident Management Project to include expanded commercial vehicle elements. Installation of additional ITS Phases of the Desoto County Incident Management Project, including expanded commercial vehicle elements.	CN mainline core track improvements in Greenwood and north of Jackson to to raise line speed. Upgrade all public corridor crossings along the CN mainline with Active 2 warning devices.	Implement Port of Yazoo rail access improvements: resurface grade crossings and rehabilitate trackage. (MS State Rail Plan).	None identified

Notes:

(1) FHWA/ATRI Nationwide Bottleneck Analysis

(2) MS Freight Advisory Committee input and Freight User Survey Bottleneck Identification

(3) Major freight generators move over 1 million tons or $200 million in value

(4) Undesired Level of Service defined as below LOS C in rural areas and below LOS D for urban areas.

(5) Capacity includes the total storage space for air cargo, ramp space and capacity in tonnage. Volume refers to cargo volumes in tonnage.

**** Excludes through freight***

(6) Crash rate greater than 80% of state average for Tier I and 100% for Tier II

(7) Criteria applies to all public road crossings with active crossing warning devices (gates and warning signals for Tier I and Tier II crossings).

(8) Pavement condition is satisfactory if IRI rating on 65% of primary route miles < 95 for Tier I and 60% < 95 for Tier II.

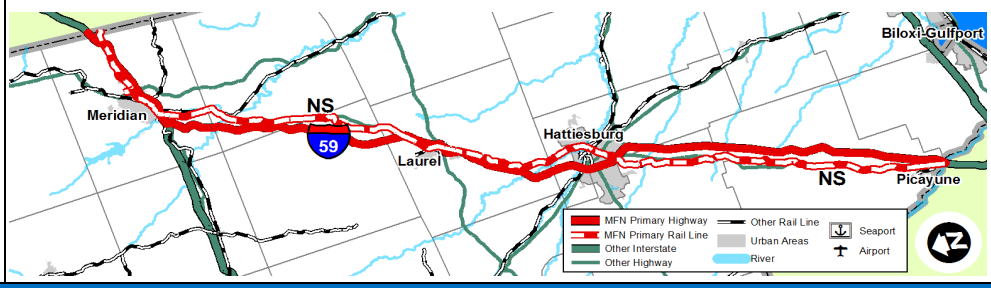
(9) Tier I: all core track meets or exceeds FRA Class 4 standards (> 40 mph for freight, > 60 mph for passenger).
Tier II: 80% of core track meets or exceeds FRA Class 3 standards (> 25 mph for freight, > 30 mph for passenger; no signals).

Tier I: I-59 / NS (Picayune-Hattiesburg-Meridian) Corridor

General Description

The I-59 / NS Corridor spans seven Mississippi counties including the cities of Hattiesburg and Meridian, the state's third and sixth largest city, respectively. In 2013, an estimated 13% of the state's total population resided within the corridor, compared to 12% of the total statewide employment. Through freight accounts for 75% of the total corridor freight, the highest share of all the MFN corridors. Freight flows along the Picayune-Hattiesburg-Meridian Corridor are expected to grow at 1.2% annually until 2040. Truck is the dominant mode with 75% of the total corridor freight tonnage, with the rest associated with the rail mode. The primary highways running through this corridor are I-59 and US 11. By 2040 nearly half of the corridor's length along I-59 is expected to be congested. Major rail lines serving the corridor include the NS mainline, which parallels I-59 and has major interchanges with the CN at Hattiesburg and with KCS in Meridian, where it interchanges with the Meridian Speedway. The primary commodities shipped through the corridor are chemical petroleum products, followed by coal and crude oil.

Corridor Map



Corridor Freight Infrastructure

	Highway	Rail	Ports & Waterways	Commercial Airports
Primary Facilities / Operators	I-59 from Louisiana border to Alabama border (170 miles)	NS Crescent Corridor mainline between Meridian and New Orleans, exiting Mississippi near Picayune, parallel to I-59 (171 miles)		
Key Connectors	MS 43 between Pine Grove Road and I-59	Meridian Southern Railway (MDS) - former KCS branch line between Meridian and Waynesboro		
Existing ITS Deployments	WIM			

Freight Flow Characteristics

		Highway	Rail	Ports & Waterways	Commercial Airports
Annual Freight: Tonnage (millions) / Value ($ billions)	2011	86.2 / $124.3	28.8 / $36.4		
	2040	119.9 / $207.5	41.8 / $64.5		
Annual Inbound/ Outbound/ Intrastate: Tonnage (millions)*	2011	13.6 / 10.4 / 5.4			
	2040	18.5 / 14.1 / 8.4			
Annual Inbound/ Outbound/ Intrastate: Value ($ billions)*	2011	$10.9 / $14.1 / $4.1			
	2040	$19.8 / $21.9 / $6.2			
% Freight Flows by Mode	2011	75%	25%		
	2040	74%	26%		
Average % Truck Mix / Average Total Daily Volume	2011	16% / 17,400			
Major Bottlenecks as identified	ATRI (1)	I-59 at I-20 in Meridian			
	FAC / Freight User Survey (2)	I-59 at I-20 in Meridian	None identified		
Top Commodities	Tonnage	Chemicals Petroleum, Coal Minerals, Crude petrol Gas, Secondary Traffic Others, Food Tobacco, and Concrete Glass Primary Metal			
	Value	Chemicals Petroleum, Fabricated Metal Machinery Equipment, Concrete Glass Primary Metal, Food Tobacco, and Misc Freight			
Major Freight Generators	Tonnage (3)	Johnston's Sand & Gravel, Hutchinson Island Mining Corp, John L Sanford Jr Inc, Sei Seal Enterprises Inc, Huey Stock Still, Hover Gravel Co, Sanderson Farms Inc, Customs Abrasives LLC, American Sand & Gravel Co.			
Top 10 Statewide Freight Counties Served		None			

Corridor Infrastructure Performance

		Highway	Rail	Ports & Waterways	Commercial Airports
Capacity: Highways: Level of Service (4) Rail: % supporting 286k weight limits Ports: channel depth Commercial airports: storage volume to capacity (5)	2011	0 miles (0%) congested	100% of NS mainline supports 286k.		
	2040	35 miles (22%) congested: - Exit 1 (LA Stateline) to Exit 6 (Sycamore Rd) - Exit 59 (US 98) to Exit 85 (MS 590) - Exit 93 (Ellisville Blvd) to Exit 95 (US 11)			
Safety: Highways: Annual Crash Rate (174/100M vmt) (6) Rail: RR crossings w/o active warning devices (7)		Crash rate: 95 21 miles (14%) across the corridor with high crash segments.	7 crossings of 30 (23%) do not have Active 2 warning devices.		
Infrastructure Condition: Highways: Pavement & Structures Rail: Speed/Track (9)	IRI rating (8)	IRI score: 88% 19 miles (12%) unacceptable. High IRI > 95 segments: - Louisiana Stateline to Exit 1 - Monroe Rd/Exit 73 to Moselle Seminary/Exit 80 - Ellisville Blvd/Exit 93 to US 11/Exit 99	Does not meet track speed standards in Laurel and Picayune areas.		
	Vertical clearance	7 of 48 bridges (15%) deficient			
	Weight-restricted bridges	0 of 89 (0%) restricted			

Corridor Needs Assessment and Infrastructure Need

	Highway	Rail	Ports & Waterways	Commercial Airports
Performance Assessment	**Level of Service**: I-59 provides acceptable LOS with no existing congestion. By 2040, the facility is forecasted to experience congestion along 35 miles (22%): in the Hattiesburg, Laurel, and Picayune areas. ATRI also identified the I-59/I-20 interchange in Meridian at the northern terminus of this corridor as one of the major nationwide bottlenecks. No segments of I-59 are programmed to be widened. **Safety**: I-59 overall is a relatively safe highway corridor. **Operations**: The corridor is a significant national freight link for through freight, with freight destined for New Orleans and states northeast of Mississippi. The I-59/I-20 interchange is one of the critical interchanges in the region, and also identified as one of the top highway bottlenecks nationwide by ATRI. **Physical Condition**: 12% of I-59 pavement miles are unacceptable but overall condition is not an issue. Overall, the I-59 corridor is in the best physical shape of all Tier I corridors. Low vertical clearance might impact interstate freight flows - 15% of I-59 bridges are deficient.	**Capacity**: The NS mainline is part of the Crescent Corridor that extends from Louisiana to New Jersey. The NS mainline handles 286k weight limit. **Safety**: A relatively small percentage of railroad crossings along this rail corridor, 23%, do not have Active 2 warning devices. **Physical Condition**: FRA track speed standards are not met in Laurel and Picayune areas.		
Potential Freight Improvement Projects	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 mainline core track improvements in Laurel and Picayune areas to raise line speed. Upgrade all public corridor crossings along the NS mainline with Active 2 warning devices.		

Notes:

(1) FHWA/ATRI Nationwide Bottleneck Analysis

(2) MS Freight Advisory Committee input and Freight User Survey Bottleneck Identification

(3) Major freight generators move over 1 million tons or $200 million in value

(4) Undesired Level of Service defined as below LOS C in rural areas and below LOS D for urban areas.

(5) Capacity includes the total storage space for air cargo, ramp space and capacity in tonnage. Volume refers to cargo volumes in tonnage.

**** Excludes through freight***

(6) Crash rate greater than 80% of state average for Tier I and 100% for Tier II

(7) Criteria applies to all public road crossings with active crossing warning devices (gates and warning signals for Tier I and Tier II crossings).

(8) Pavement condition is satisfactory if IRI rating on 65% of primary route miles < 95 for Tier I and 60% < 95 for Tier II.

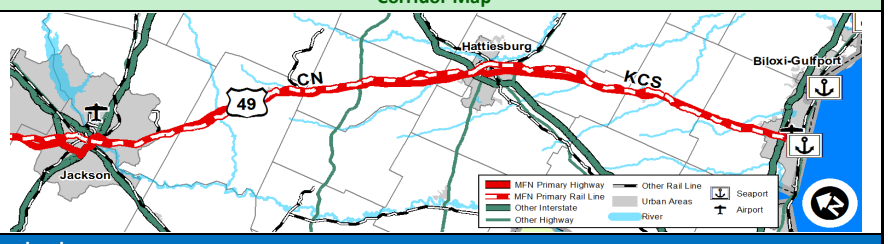
(9) Tier I: all core track meets or exceeds FRA Class 4 standards (> 40 mph for freight, > 60 mph for passenger). Tier II: 80% of core track meets or exceeds FRA Class 3 standards (> 25 mph for freight, > 30 mph for passenger; no signals).

Tier I: US 49 / CN / KCS (Jackson-Hattiesburg-Gulfport) Corridor

General Description

The US 49/CN Corridor runs through central Mississippi, between Jackson and Gulfport, and includes Hattiesburg. The nine counties within the corridor account for 18% of both the total population and statewide employment. Rail is the dominant mode in this corridor and accounts for over 50% of total freight tonnage, followed by truck with 42%. Significant increase in congestion is expected along the corridor's primary highway, US 49, with 57% of the facility's length becoming congested by 2040. The corridor includes the CN rail line running along US 49 between Jackson and Hattiesburg (it continues along US 98 from Hattiesburg to the Alabama border). The KCS line runs between Hattiesburg and Gulfport along US 49. The Jackson-Evers International Airport provides freight aviation services while the Port of Gulfport is the deep water port serving the area. Corridor freight flow is expected to grow at 1.5% annually until 2040. The primary commodities shipped through the corridor are chemical petroleum products and coal.

Corridor Map



Corridor Freight Infrastructure

	Highway	Rail	Ports & Waterways	Commercial Airports
Primary Facilities / Operators	US 49 from Jackson to Gulfport via Hattiesburg (154 miles)	CN Beaumont Subdivision between Jackson and Hattiesburg. KCS Gulfport Subdivision between Hattiesburg and Gulfport. (161 miles total).	Port of Gulfport	Gulfport-Biloxi International Airport Jackson International Airport
Key Connectors	NHS Connector to the corridor's Port of Gulfport (listed under 'Ports & Waterways')	KCS branch to DuPont and Bayou Concrete Plant	To Port of Gulfport from I-10 via US 90: port access road (NHS Intermodal Connector) To Port of Gulfport from I-10 via US 90: West Pier Gate to 27th Avenue (NHS Intermodal Connector)	To Gulfport-Biloxi International Airport: US 49 and Airport Rd/34th Street to airport (NHS Intermodal Connector)
Existing ITS Deployments	Jackson Metro Incident Management I / Hurricane Response Project: - CCTV cameras - Dynamic Message Signs Gulf Region Incident Management System: - CCTV cameras - Dynamic Message Signs			

Freight Flow Characteristics

		Highway	Rail	Ports & Waterways	Commercial Airports
Annual Freight: Tonnage (millions) / Value ($ billions)	2011	32.7 / $53.6	42.5 / $62.0	3.6 / $0.3	< 1 / $1.6
	2040	51.7 / $102.7	63.4 / $113.0	7.3 / $1.5	< 1 / $4.4
Annual Inbound/ Outbound/ Intrastate: Tonnage (millions)*	2011	20.4 / 10.6 / 7.6			
	2040	30.8 / 16.9 / 12.3			
Annual Inbound/ Outbound/ Intrastate: Value ($ billions)*	2011	$18.3 / $15.8 / $6.3			
	2040	$35.8 / $27.2 / $8.7			
% Freight Flows by Mode	2011	42%	54%	5%	< 1%
	2040	42%	52%	6%	< 1%
Average % Truck Mix / Average Total Daily Volume	2011	10% / 20,700			
Major Bottlenecks as identified	ATRI (1)	None			
	FAC / Freight User Survey (2)	US 49: between I-20 and Star; between Hattiesburg and Port of Gulfport	None identified	None identified	None identified
Top Commodities	Tonnage	Chemicals Petroleum, Coal Minerals, Crude petrol Gas, Food Tobacco, Concrete Glass Primary Metal, and Agriculture			
	Value	Chemicals Petroleum, Fabricated Metal Machinery Equipment, Misc Freight, Concrete Glass Primary Metal, and Food Tobacco			
Major Freight Generators	Tonnage (3)	John L Sanford Jr Inc, Sanderson Farms, Hover Gravel Co, Hood Industries, American Sand & Gravel Co.			
Top 10 Statewide Freight Counties Served		Harrison, Rankin			

Corridor Infrastructure Performance

		Highway	Rail	Ports & Waterways	Commercial Airports
Capacity: Highways: Level of Service (4) Rail: % supporting 286k weight limits Ports: channel depth Commercial airports: storage volume to capacity (5)	2011	9 miles (6%) congested: - I-20 to E Main St/MS 469 - Oneal Rd north of I-10 to Airport Rd south of I-10	CN Beaumont Subdivision and KCS Gulfport Subdivision both support 286k limits.	Authorized channel depth vs actual depth	Jackson: 21% in 2008 (MSGM&TS) Gulfport: 64% in 2008 (MSGM&TS)
	2040	46 miles (30%) congested: I-20 to Star Rd; Old Hwy 49 N to Richland Cir; Gunter Rd to E Main St; Zion Hill Rd to Pinola Rd; Rock Hill Rd to US 84; Main St to Kola Rd; MS 42 to Old HWY 42/Campbell Dr; Hardy St to Elks Lake Rd/Edwards St; E. Wrotham Rd to Dedeaux Rd; Landon Rd to Beach Blvd/US 90			
Safety: Highways: Annual Crash Rate (174/100M vmt) (6) Rail: RR crossings w/o active warning devices (7)		Crash rate: 364 Corridor does not meet Tier I safety performance criteria. 40 miles (26%) across the corridor with high crash segments.	38 crossings of 49 (78%) do not have Active 2 warning devices.		
Infrastructure Condition: Highways: Pavement & Structures Rail: Speed/Track (9)	IRI rating (8)	IRI score: 70% 46 miles (30%) unacceptable. High IRI > 95 segments: - I-20 to MS 149 - Cascio Rd to Peps Point Rd - W 7th St to MS 198 - Southgate Rd to Carnes Rd - Old Hwy 49 to MS 53/N Swan Rd - I-10 to US 90	Sections of CN mainline and sections of KCS mainline in Wiggins and south of I-10 in Gulfport do not meet track speed standards.		
	Vertical clearance	10 of 13 bridges (77%) deficient			
	Weight-restricted bridges	2 of 71 (3%) restricted			

Corridor Needs Assessment and Infrastructure Need

	Highway	Rail	Ports & Waterways	Commercial Airports
Performance Assessment	**Level of Service**: US 49 provides acceptable LOS today, with only short congested segments. The FAC identified multiple sections of the highway as existing bottlenecks though, including Jackson, Richland, Hattiesburg, and Port of Gulfport areas. The FAC also recommended that US 49 should be upgraded to Interstate standards from Hattiesburg to Gulfport. By 2040, the facility is forecasted to experience congestion along 46 miles (30%). Segments of US 49 are programmed to be widened, most notably in the Florence area south of Jackson. **Safety**: US 49 is the only Tier I corridor that does not meet safety performance criteria. Crash rate is very high - more than triple Tier I corridor average. **Operations**: The corridor is a significant statewide and regional freight link with freight destined for Jackson area from the Gulf Coast and vice-versa. There are no existing ITS deployments outside of Jackson area. **Physical Condition**: The corridor does not meet Tier I pavement condition criteria, with IRI rating better than 95 for less than 75% of primary route miles - 70%. 26% of US 49 pavement miles are unacceptable but overall condition is not an issue. This is the worst faring Tier I corridor by bridge clearance, with 77% of bridges deficient and potentially impacting freight flows. US 49 is the only Tier I corridor with weight-restricted bridges, although small (2 of 71 bridges).	**Capacity**: the CN and KCS mainlines handle 286k weight limit. **Safety**: 78% the railroad crossings on this busy freight rail corridor do not have Active 2 warning devices. **Physical Condition**: the CN mainline and sections of KCS mainline do not have active or passive warning devices.	Last mile roadway and rail connection is critical for the Port of Gulfport to remain competitive, need for new or improved last-mile access roads to ports, with particular focus on their physical and operating conditions. US 49 provides the critical link between I-10, US 90, and to the Port of Gulfport. KCS provides rail access to the port's vicinity, but not directly to the facility.	Last-mile roadway access improvements can improve freight flows in and out of Gulfport-Biloxi International Airport and Gulfport-Biloxi International Airport. V/C need to be maintained below 100% to avoid capacity shortfall - currently both airports within the corridor comfortably meet the criteria.
Potential Freight Improvement Projects	Repaving and widening of US 49 from I-10 to US 90 (MDOT STIP/Preliminary Priority List). Repaving and widening of US 49 from I-20 to Star Rd in Star (MDOT STIP/Preliminary Priority List). Repaving and widening US 49 from School Rd to O'Neal Rd in Gulfport - to 6 lane divided. I-10/US 49 interchange: capacity and interchange improvements. 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. Finalize deployment of the Gulf Region Incident Management System ITS improvements along the Gulf Coast.	CN mainline and KCS mainline in Gulfport and Wiggins track improvements to raise line speed. Upgrade all public corridor crossings along the KCS and NS mainlines with active 2 warning devices.	Develop rail access directly into Port of Gulfport facility (MS State Rail Plan).	None identified

Notes:

(1) FHWA/ATRI Nationwide Bottleneck Analysis

(2) MS Freight Advisory Committee input and Freight User Survey Bottleneck Identification

(3) Major freight generators move over 1 million tons or $200 million in value

(4) Undesired Level of Service defined as below LOS C in rural areas and below LOS D for urban areas.

(5) Capacity includes the total storage space for air cargo, ramp space and capacity in tonnage. Volume refers to cargo volumes in tonnage.

**** Excludes through freight***

(6) Crash rate greater than 80% of state average for Tier I and 100% for Tier II

(7) Criteria applies to all public road crossings with active crossing warning devices (gates and warning signals for Tier I and Tier II crossings).

(8) Pavement condition is satisfactory if IRI rating on 65% of primary route miles < 95 for Tier I and 60% < 95 for Tier II.

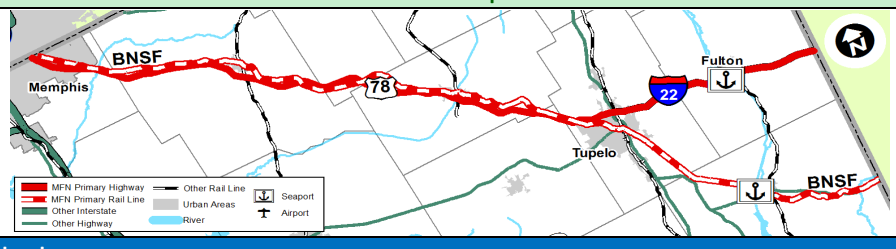
(9) Tier I: all core track meets or exceeds FRA Class 4 standards (> 40 mph for freight, > 60 mph for passenger).
Tier II: 80% of core track meets or exceeds FRA Class 3 standards (> 25 mph for freight, > 30 mph for passenger; no signals).

Tier I: US 78 (I-22) / BNSF (Olive Branch-Tupelo-Fulton) Corridor

General Description

The US 78 (I-22) / BNSF Corridor runs from Olive Branch to the Alabama border along US 78 (I-22) and the BNSF rail line, passing through eight counties in northern Mississippi. These counties account for 14% of total population and 13% of total employment across the state. The corridor freight tonnage is expected to grow 1.3% annually. Rail freight was the dominant mode in 2011, accounting for 66% of the total corridor freight. However, truck freight is expected to grow its modal share from 33% in 2011 to 51% in 2040. By 2040, it is expected that 88% of US 78 within the corridor will be congested. Key transportation infrastructure in this corridor includes I-22 and US 78. The corridor runs parallel to BNSF main line that connects to the KCS in Tupelo and CN in Memphis. The primary commodities shipped through the corridor are coal, crude oil, and chemicals.

Corridor Map



Corridor Freight Infrastructure

	Highway	Rail	Ports & Waterways	Commercial Airports
Primary Facilities / Operators	US 78 / I-22 from Tennessee border to Alabama border (118 miles)	BNSF mainline between Memphis, TN and Birmingham, AL (130 miles)	Port of Amory, Port of Itawamba	
Key Connectors	US 278 between Amory and US 78	Mississippi Central Railroad Company (MSCI) from Oxford, connecting with BNSF at Holly Springs and NS at Grand Junction, Tennessee	To Port of Amory: I-22 to US 45: east on US 278, north on Waterway Dr, west on Port Access Road to port (NHS Intermodal Connector)	
	MS 15 between US 78 and Blue Mountain	Mississippi Tennessee Railroad (MTNR) runs from connections with BNSF and KCS at New Albany to Falkner.	To Port of Itawamba: from US 78: north on MS 25, west on South Access Route to port (NHS Intermodal Connector)	
	MS 302 from I-55 to US 78	R.J. Corman-Tennessee Terminal (RJCK) running east from junction and interchange with BNSF at Olive Branch		
		The Mississippian Railway Cooperative (MMSW) - northeast from BNSF connection in Amory to Fulton		
Existing ITS Deployments	PrePass; WIM			

Freight Flow Characteristics

		Highway	Rail	Ports & Waterways	Commercial Airports
Annual Freight: Tonnage (millions) / Value ($ billions)	2011	24.7 / $37.7	48.7 / $44.4	0.4 / $0.2	
	2040	54.9 / $80.9	52.8 / $78.7	0.8 / $0.2	
Annual Inbound/ Outbound/ Intrastate: Tonnage (millions)*	2011	12.4 / 8.1 / 2.4			
	2040	21.4 / 16.2 / 5.3			
Annual Inbound/ Outbound/ Intrastate: Value ($ billions)*	2011	$8.4 / $12.5 / $2.3			
	2040	$14.6 / $25.9 / $2.5			
% Freight Flows by Mode	2011	33%	66%	1%	
	2040	51%	49%	1%	
Average % Truck Mix / Average Total Daily Volume	2011	11% / 18,400			
Major Bottlenecks as identified	ATRI (1)	None			
	FAC / Freight User Survey (2)	None identified	None identified	None identified	
Top Commodities	Tonnage	Coal Minerals, Crude petrol Gas, Chemicals Petroleum, Agriculture, Secondary Traffic Others, and Food Tobacco			
	Value	Fabricated Metal Machinery Equipment, Chemicals Petroleum, Misc Freight, Secondary Traffic Others and Food Tobacco			
Major Freight Generators	Tonnage (3)	Axiall Corp, Profile Products LLC, Mississippi Gravel Sales Inc			
Top 10 Statewide Freight Counties Served		Monroe			

Corridor Infrastructure Performance

		Highway	Rail	Ports & Waterways	Commercial Airports
Capacity: Highways: Level of Service (4) Rail: % supporting 286k weight limits Ports: channel depth Commercial airports: storage volume to capacity (5)	2011	0 miles (0%) congested	100% of BNSF mainline supports 286k.	Recovery time from flood or drought to 12' minimum depth	
	2040	37 miles (31%) congested: - Exit 1 (Craft Rd) to Exit 4 (Cockrum Rd) - Exit 6 (Bethel Rd) to Exit 26 (Landfill Rd) - Exit 30 (MS 4) to Exit 37 (CCC Rd) - Exit 76 (MS 9) to Exit 81 (MS 178) - Exit 85 (Natchez Trace Pkwy) to Exit 94 (MS 371)			
Safety: Highways: Annual Crash Rate (174/100M vmt) (6) Rail: RR crossings w/o active warning devices (7)		Crash rate: 65 13 miles (11%) across the corridor with high crash segments.	10 crossings of 21 (48%) do not have Active 2 warning devices.		
Infrastructure Condition: Highways: Pavement & Structures Rail: Speed/Track (9)	IRI rating (8)	IRI score: 70% 36 miles (30%) unacceptable. High IRI > 95 segments: - Red Bank Rd to Landfill Rd - Sawmill Rd to MS 178 - MS 30 to MS 15 - MS 25 to Alabama Stateline	Meets track speed standards outside of one track segment in Tupelo.		
	Vertical clearance	1of 51 bridges (2%) deficient			
	Weight-restricted bridges	0 of 113 (0%) restricted			

Corridor Needs Assessment and Infrastructure Need

	Highway	Rail	Ports & Waterways	Commercial Airports
Performance Assessment	**Level of Service**: Today US 78 provides acceptable LOS, but is forecast to experience growing congestion and delay by 2040, with 31% of the corridor congested, notably in the Memphis area, and around Tupelo. Conversion of US 78 to I-22 west all the way to Memphis should improve future LOS for both passenger and freight traffic. **Safety**: US 78 is a very safe highway corridor. It is the safest Tier I corridor overall. **Operations**: The corridor is an important regional freight link from Memphis, a major national freight hub, to northeastern MS, including Tupelo, and to points east in Alabama. Converting US 78 to interstate standards will improve operations along the corridor, with average truck travel speed bound to increase. **Physical Condition**: The corridor does not meet Tier I pavement condition criteria, with IRI rating better than 95 for less than 75% of primary route miles - 70%. Large portion of the corridor, 30%, has unacceptable pavement condition. Low vertical clearance might slightly impact freight flows, with only one bridge not meeting this performance measure.	**Capacity**: Rail freight flows are more dominant on a percentage basis than truck freight flows within the corridor (66% vs. 33%). 100% of the BNSF mainline can handle 286k weight limit. **Safety**: 48% of the railroad crossings along this rail corridor do not have Active 2 warning devices. **Physical Condition**: FRA track speed standards are met outside of one section in the Tupelo area.	Last mile rail and roadway access is critical for the two river ports located within the corridor. The river ports are not served directly by US 78, but rather via collectors - in both cases NHS Intermodal Connectors. Rail access to Port of Itawamba is provided by the Mississippian Railway Cooperative connecting to the BNSF mainline, while Port of Amory currently has no rail access. The quality of last mile access rail service provided by the MMSW depends on the quality of its connection to the BNSF.	
Potential Freight Improvement Projects	US 78 repaving projects: - Exit 1 (Craft Rd) to Exit 37 (CCC Rd) - Exit 76 (MS 9) to Exit 94 (MS 371) Raise one US 78 bridge to meet 16' clearance performance standard. Development and deployment of the ITS Projects in the Tupelo area, including commercial vehicle elements. Complete conversion of US 78 to I-22 (long term).	BNSF mainline core track improvements in Tupelo to raise line speed. Upgrade all public corridor crossings along the BNSF mainline with Active 2 warning devices.	Port of Amory - BNSF spur: upgrade 12 rail bridges between Amory and Columbus to permit 286K loads and extend rail spur to US 278 bridge (MULTIPLAN 2035 and MS State Rail Plan). Port of Itawamba (MMSW): rehabilitate 23 miles of rail line from Fulton to Amory to handle 286k carload weights (MS State Rail Plan). US 278 - US 45: widen to 4 lanes to Port of Amory (MULTIPLAN 2035).	

Notes:

(1) FHWA/ATRI Nationwide Bottleneck Analysis

(2) MS Freight Advisory Committee input and Freight User Survey Bottleneck Identification

(3) Major freight generators move over 1 million tons or $200 million in value

(4) Undesired Level of Service defined as below LOS C in rural areas and below LOS D for urban areas.

(5) Capacity includes the total storage space for air cargo, ramp space and capacity in tonnage. Volume refers to cargo volumes in tonnage.

**** Excludes through freight***

(6) Crash rate greater than 80% of state average for Tier I and 100% for Tier II

(7) Criteria applies to all public road crossings with active crossing warning devices (gates and warning signals for Tier I and Tier II crossings).

(8) Pavement condition is satisfactory if IRI rating on 65% of primary route miles < 95 for Tier I and 60% < 95 for Tier II.

(9) Tier I: all core track meets or exceeds FRA Class 4 standards (> 40 mph for freight, > 60 mph for passenger).
Tier II: 80% of core track meets or exceeds FRA Class 3 standards (> 25 mph for freight, > 30 mph for passenger; no signals).

Tier I: Mississippi River (Port of Rosedale-Port of Natchez) Corridor

River

Waterborne freight movement along Mississippi River provide Mississippi with access to one of the most affordable forms of freight transportation that tends to relieve highways and rail congestion, has high throughput, is energy efficient, and is a relatively safe way of moving large amounts of freight. The Mississippi portion of the Mississippi River includes the Port of Greenville, Port of Natchez, Port of Rosedale, Port of Vicksburg, Port of Yazoo, and Port of Claiborne County. Nearly 9 million tons of freight flowed through the Mississippi River between Port of Rosedale to Port of Natchez in 2011, of which about 4 million tons originated or terminated in one of six ports in Mississippi. Agriculture, and grain shipments specifically, comprise the largest share of Mississippi River commerce in Mississippi overall, but petroleum products are the largest commodity group handled by Mississippi's ports. Coal, crude oil, concrete glass metals, and fabricated machinery equipment are other primary commodities handled by the six Mississippi River ports in the state.

Corridor Map

Corridor Freight Infrastructure

	Highway	Rail	Ports & Waterways	Commercial Airports
Primary Facilities / Operators	US 61 (also Tier II corridor) from Port of Rosedale to Port of Natchez		Mississippi River, Yazoo River; Port of Greenville, Port of Natchez, Port of Rosedale, Port of Vicksburg, Port of Yazoo, and Port of Claiborne County	
Key Connectors	To Port of Greenville: from US 82: 2.8 mi on Harbor Front Road to port (NHS Intermodal Connector)	The Columbus and Greenville Railway (CAGY) serves Port of Greenville		
	To Port of Rosedale: Port Access Rd to Russell Crutcher to MS 8 to US 61 (NHS Intermodal Connector)	The Great River Railroad (GTR) serves Port of Rosedale.		
	To Port of Vicksburg : from US 61/I-20 interchange, west on Clay St, Cherry St, 1st East St, north on Washington, and west on Haining Rd to port (NHS Intermodal Connector)	Vicksburg Southern Railroad (VSOR) - connection to Port of Vicksburg		
	To Port of Natchez: from U.S. 84 / MS 425: Government Fleet Rd to Magnolia Bluff Rd, L.E. Barry Rd to port (NHS Intermodal Connector)	Natchez Railway, LLC (NTZR) - former CN branch to Port of Natchez.		
	To Port of Yazoo: from I-55 via MS 3, River Rd, and Levee Rd to port (NHS Intermodal Connector)	CN mainline to Port of Yazoo		
Existing ITS Deployments	PrePass (US 84 Mississippi River crossing) Four Mississippi River bridges monitoring: US 49 bridge in Lula, Mississippi / Helena, Arkansas; US 82 bridge in Greenville, Mississippi / Lake Village, Arkansas; I-20 bridge in Vicksburg, Mississippi; and US 84 bridge in Natchez, Mississippi / Ferriday, Louisiana: - Surveillance cameras - Traffic volumes/speeds on approaches - Real Time River Current data sensors - Dynamic Message Signs - Detour monitoring			

Freight Flow Characteristics

		Highway	Rail	Ports & Waterways	Commercial Airports
Annual Freight: Tonnage (millions) / Value ($ billions)	2011			8.7 / $4.0	
	2040			11.4 / $4.9	
Annual Inbound/ Outbound/ Intrastate: Tonnage (millions)*	2011	4.5 / 4.0 / 0.3			
	2040	5.1 / 5.9 / 0.3			
Annual Inbound/ Outbound/ Intrastate: Value ($ billions)*	2011	2.2 / 1.6 / 0.2			
	2040	2.0 / 2.7 / 0.2			
% Freight Flows by Mode	2011			100%	
	2040			100%	
Average % Truck Mix / Average Total Daily Volume	2011				
Major Bottlenecks as identified	ATRI (1)				
	FAC / Freight User Survey (2)	None identified	None identified	None identified	
Top Commodities	Tonnage	Agriculture, Chemicals Petroleum, Coal Minerals, Crude petrol Gas, Concrete Glass Primary Metal, and Fabricated Metal Machinery Equipment			
	Value	Agriculture, Chemicals Petroleum, Coal Minerals, Crude petrol Gas, Concrete Glass Primary Metal, and Fabricated Metal Machinery Equipment			
Major Freight Generators	Tonnage (3)	N Runyon WJ & Son Inc, Monsanto Co, Mars Food US			
Top 10 Statewide Freight Counties Served		Warren, Washington			

Corridor Infrastructure Performance

		Highway	Rail	Ports & Waterways	Commercial Airports
Capacity: Highways: Level of Service (4) Rail: % supporting 286k weight limits Ports: channel depth Commercial airports: storage volume to capacity (5)	2011			Recovery time from flood or drought to 12' minimum depth	
	2040				
Safety: Highways: Annual Crash Rate (174/100M vmt) (6) Rail: RR crossings w/o active warning devices (7)					
Infrastructure Condition: Highways: Pavement & Structures Rail: Speed/Track (9)	IRI rating (8)				
	Vertical clearance				
	Weight-restricted bridges				

Corridor Needs Assessment and Infrastructure Need

	Highway	Rail	Ports & Waterways	Commercial Airports
Performance Assessment	Highways such as US 61, US 82, US 84 and local connectors provide critical last mile access to the Mississippi River inland ports. I-20 via US 61 provides critical access to the Port of Vicksburg. The recently implemented ITS bridge and detour monitoring across Mississippi River in Vicksburg, Greenville, Natchez, and Lula increase truck volumes/speeds on approaches.	Last mile rail access is an issue for multiple MS River ports served by short lines. Port of Rosedale has no rail access currently, and all other MS River ports are in need of rail access, maintenance, modernization, and capacity improvements.	Mississippi has five public ports immediately adjacent to the Mississippi River, and one accessed from the Mississippi River via the Yazoo River. All are important to the state's economy (although Port of Claiborne County currently does not process any cargo). Inland port alternatives help keep rates for other modes competitive. Beyond Mississippi, inland ports provide feeder service for international and domestic shipments.	
Potential Freight Improvement Projects	Consider and prioritize improvements to the identified corridor NHS connectors in highway project programming due to their role in providing roadway access to the Mississippi River ports. US 61 to Haining Rd./ Port of Vicksburg - new roadway to the port (MULTIPLAN 2035; FAC) US 61 Business / Haining Rd bridge access to Port of Vicksburg - bridge replacement with 4 lane bridge (MULTIPLAN 2035).	Reinstate rail access to the Port of Rosedale. Implement Port of Yazoo rail access improvements: resurfacing grade crossings and rehabilitation of trackage. (MS State Rail Plan).	Encourage continued use of the Port of Vicksburg, Port of Greenville, and Port of Rosedale through promoting highway and rail access to port facilities along the I-20, US 61, and US 82 through the Intermodal Connector Improvement Program.	

Notes:

(1) FHWA/ATRI Nationwide Bottleneck Analysis

(2) MS Freight Advisory Committee input and Freight User Survey Bottleneck Identification

(3) Major freight generators move over 1 million tons or $200 million in value

(4) Undesired Level of Service defined as below LOS C in rural areas and below LOS D for urban areas.

(5) Capacity includes the total storage space for air cargo, ramp space and capacity in tonnage. Volume refers to cargo volumes in tonnage.

**** Excludes through freight***

(6) Crash rate greater than 80% of state average for Tier I and 100% for Tier II

(7) Criteria applies to all public road crossings with active crossing warning devices (gates and warning signals for Tier I and Tier II crossings).

(8) Pavement condition is satisfactory if IRI rating on 65% of primary route miles < 95 for Tier I and 60% < 95 for Tier II.

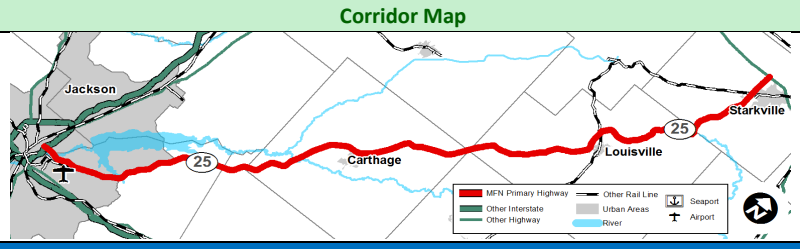
(9) Tier I: all core track meets or exceeds FRA Class 4 standards (> 40 mph for freight, > 60 mph for passenger).
Tier II: 80% of core track meets or exceeds FRA Class 3 standards (> 25 mph for freight, > 30 mph for passenger; no signals).

Tier II: MS 25 (Jackson-Louisville-Starkville) Corridor

General Description

The MS 25 Tier II Corridor runs northeast from Jackson to Starkville. Truck freight was the dominant mode in 2011, accounting for 51% of the total corridor freight by tonnage. Truck is also the dominant mode in the corridor by the value of moved freight. Truck freight is expected to grow its modal share from 51% in 2011 to 57% in 2040. The corridor currently experiences no congestion and by 2040 less than 10% of its length will be congested. Key transportation infrastructure in this corridor includes MS 25, and Jackson International Airport. There are no mainline rail tracks parallel to MS 25, but KCS mainline from Starkville to Newton provides access to multiple towns along the MS 25 corridor. The primary commodities shipped through the corridor is petroleum chemicals, coal, and crude oil.

Corridor Map



Corridor Freight Infrastructure

	Highway	Rail	Ports & Waterways	Commercial Airports
Primary Facilities / Operators	MS 25 from Jackson / I-55 northeast to Starkville / US 82 via Carthage and Louisville (124 miles)			Jackson International Airport
Key Connectors	MS 35 from MS 25 in Carthage to MS 12 in Kosciusko, providing access to Tyson Foods Inc. MS 475 between I-20 and MS 25, providing access to Jackson and Jackson International Airport (NHS Intermodal Connector south of Jackson International Airport)	KCS mainline from West Point south to Newton, serving Starkville and Louisville		
Existing ITS Deployments	None			

Freight Flow Characteristics

		Highway	Rail	Ports & Waterways	Commercial Airports
Annual Freight: Tonnage (millions) / Value ($ billions)	2011	19.7 / $39.7	18.8 / $22.3		< 0.1 / $1.6
	2040	34.7 / $79.7	26.1 / $41.3		< 0.1 / $4.4
Annual Inbound/ Outbound/ Intrastate: Tonnage (millions)*	2011	9.4 / 5.8 / 4.8			
	2040	12.6 / 9.3 / 9.3			
Annual Inbound/ Outbound/ Intrastate: Value ($ billions)*	2011	$9.1 / $9.3 / $3.7			
	2040	$18.2 / $19.3 / $6.0			
% Freight Flows by Mode	2011	51%	49%		< 0.1%
	2040	57%	43%		< 0.1%
Average % Truck Mix / Average Total Daily Volume	2011	7% / 8,900			
Major Bottlenecks as identified	ATRI (1)	None			
	FAC / Freight User Survey (2)	Jackson area	None identified		None identified
Top Commodities	Tonnage	Chemicals Petroleum, Coal Minerals, Crude petrol Gas, Food Tobacco, Agriculture, and Secondary Traffic Others			
	Value	Fabricated Metal Machinery Equipment, Concrete Glass Primary Metal, Misc Freight, Food Tobacco, and Chemicals Petroleum			
Major Freight Generators	Tonnage (3)	None			
Top 10 Statewide Freight Counties Served		Rankin			

Corridor Infrastructure Performance

		Highway	Rail	Ports & Waterways	Commercial Airports
Capacity: Highways: Level of Service (4) Rail: % supporting 286k weight limits Ports: channel depth Commercial airports: storage volume to capacity (5)	2011	7 miles (5%) congested: - I-55 to Luckney Rd			21% in 2008 (MSGM&TS)
	2040	13 miles (10%) congested: - I-55 to MS 471			
Safety: Highways: Annual Crash Rate (174/100M vmt) (6) Rail: RR crossings w/o active warning devices (7)		Crash rate: 265 Corridor does not meet Tier II safety performance criteria. 22 miles (18%) across the corridor with high crash segments.			
Infrastructure Condition: Highways: Pavement & Structures Rail: Speed/Track (9)	IRI rating (8)	IRI score: 89% 14 miles (11%) unacceptable. High IRI > 95 segments: - I-55 to Lakeland Dr - Flowood Dr to Holly Bush Rd - Pisgah Rd to MS 43 - Old Hwy 25 to MS 12			
	Vertical clearance	0 of 9 (0%) restricted			
	Weight-restricted bridges	0 of 73 (0%) restricted			

Corridor Needs Assessment and Infrastructure Need

	Highway	Rail	Ports & Waterways	Commercial Airports
Performance Assessment	**Level of Service**: MS 25 provides good LOS with only short congested segments in Jackson. Multiple segments of MS 25 in the urban Jackson area are programmed to be widened. **Safety**: MS 25 overall does not meet Tier II safety performance criteria. **Operations**: The corridor passes through a variety of settings, including urbanized Jackson and small towns, Jackson International Airport. Its major interchanges with key statewide facilities (e.g., I-55) allow for quick interstate access. It provides regional connection between Jackson and Starkville /Columbus area. Issues with operations along the corridor are attributed to urban congestion in Jackson, with no issues outside the capitol area. **Physical Condition**: Only 11% of MS 25 pavement miles is unacceptable and overall pavement condition is not an issue. This corridor is one of the few MFN corridors that has no issues with bridge vertical clearance or weight restrictions.			Last-mile roadway access improvements can improve freight flows in and out of Jackson International Airport. V/C need to be maintained below 100% to avoid capacity shortfall - currently Jackson airport comfortably meets the criteria.
Potential Freight Improvement Projects	Repaving and widening of MS 25 from Grants Ferry Rd to MS 471 (MDOT STIP/Preliminary Priority List). Safety improvements along MS 25.			None identified

Notes:

(1) FHWA/ATRI Nationwide Bottleneck Analysis

(2) MS Freight Advisory Committee input and Freight User Survey Bottleneck Identification

(3) Major freight generators move over 1 million tons or $200 million in value

(4) Undesired Level of Service defined as below LOS C in rural areas and below LOS D for urban areas.

(5) Capacity includes the total storage space for air cargo, ramp space and capacity in tonnage. Volume refers to cargo volumes in tonnage.

**** Excludes through freight***

(6) Crash rate greater than 80% of state average for Tier I and 100% for Tier II

(7) Criteria applies to all public road crossings with active crossing warning devices (gates and warning signals for Tier I and Tier II crossings).

(8) Pavement condition is satisfactory if IRI rating on 65% of primary route miles < 95 for Tier I and 60% < 95 for Tier II.

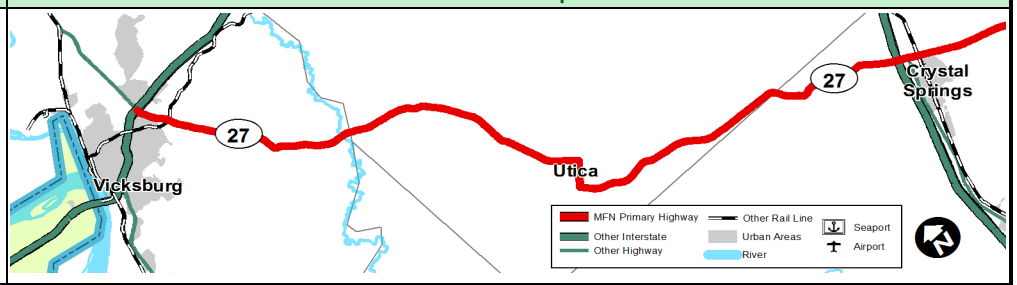
(9) Tier I: all core track meets or exceeds FRA Class 4 standards (> 40 mph for freight, > 60 mph for passenger). Tier II: 80% of core track meets or exceeds FRA Class 3 standards (> 25 mph for freight, > 30 mph for passenger; no signals).

Tier II: MS 27 (Vicksburg-Utica-Crystal Springs) Corridor

General Description

The MS 27 Tier II Corridor runs southeast from Vicksburg to Crystal Springs via Utica. Nearby rail freight was the dominant mode in 2011, accounting for 73% of the total corridor freight by tonnage. Rail is also the dominant mode in the corridor by the value of moved freight. Truck freight is expected to grow its modal share from 21% in 2011 to 26% in 2040. Trucks are able to use MS 27 to connect between I-20 and I-55 within having to drive through Jackson. This bypass of the Jackson area also provides access to some of the largest freight generators by tonnage in the state near the interchange of I-55 and MS 27 in Copiah County. The MS 27 Corridor currently experiences and is forecast to experience no roadway congestion. Key transportation infrastructure in this corridor includes MS 27. Although there are no mainline rail tracks parallel to MS 27, both the KCS mainline flows (running parallel to I-20) and CN mainline flows (parallel to I-55) are captured as part of this corridor's overall flows due to their proximity. The primary commodities shipped through the corridor is coal and other minerals, crude oil, and chemicals petroleum.

Corridor Map



Corridor Freight Infrastructure

	Highway	Rail	Ports & Waterways	Commercial Airports
Primary Facilities / Operators	MS 27 from I-20 in Vicksburg to I-55 in Crystal Springs via Utica (41 miles)	No primary rail		
Key Connectors	MS 18 from MS 27 in Utica to MS 467 in Raymond MS 18 from MS 27 in Utica to US 61 in Port Gibson			
Existing ITS Deployments	None			

Freight Flow Characteristics

		Highway	Rail	Ports & Waterways	Commercial Airports
Annual Freight: Tonnage (millions) / Value ($ billions)	2011	10.1 / $14.8	36.0 / $40.9	3.4 / $1.8	
	2040	18.8 / $35.4	51.0 / $47.1	3.2 / $1.2	
Annual Inbound/ Outbound/ Intrastate: Tonnage (millions)*	2011	12.3 / 7.1 / 3.4			
	2040	15.4 / 11.9 / 5.2			
Annual Inbound/ Outbound/ Intrastate: Value ($ billions)*	2011	$9.7 / $10.9 / $1.8			
	2040	$16.4 / $27.6 / $2.6			
% Freight Flows by Mode	2011	21%	73%	7%	
	2040	26%	70%	4%	
Average % Truck Mix / Average Total Daily Volume	2011	6% / 3,400			
Major Bottlenecks as identified by	ATRI (1)	None			
	FAC / Freight User Survey (2)	MS 18 between Raymond and Port Gibson			
Top Commodities by	Tonnage	Coal Minerals, Crude petrol Gas, Chemicals Petroleum, Agriculture, Paper Printed Matter, and Food Tobacco			
	Value	Chemicals Petroleum, Misc Freight, Fabricated Metal Machinery Equipment, Secondary Traffic Others, and Concrete Glass Primary Metal			
Major Freight Generators served by	Tonnage (3)	Blain Sand & Gravel Inc, N Runyon WJ & Son Inc.			
Top 10 Statewide Freight Counties Served		Hinds, Warren, Copiah			

Corridor Infrastructure Performance

		Highway	Rail	Ports & Waterways	Commercial Airports
Capacity: Highways: Level of Service (4) Rail: % supporting 286k weight limits Ports: channel depth Commercial airports: storage volume to capacity (5)	2011	0 miles (0%) congested			
	2040	0 miles (0%) congested			
Safety: Highways: Annual Crash Rate (174/100M vmt) (6) Rail: RR crossings w/o active warning devices (7)		Crash rate: 316 Corridor does not meet Tier II safety performance criteria. 12 miles (28%) across the corridor with high crash segments.			
Infrastructure Condition: Highways: Pavement & Structures Rail: Speed/Track (9)	IRI rating (8)	IRI score: 56% 19 miles (43%) unacceptable. Corridor below Tier II performance target. High IRI > 95 segments: - I-20 to Raxton Rd - Pine St to I-55			
	Vertical clearance	0 of 2 bridges (0%) deficient			
	Weight-restricted bridges	2 of 9 (22%) restricted			

Corridor Needs Assessment and Infrastructure Need

	Highway	Rail	Ports & Waterways	Commercial Airports
Performance Assessment	**Level of Service:** MS 27 provides good LOS with minimal existing and forecasted congestion. A few segments of MS 25 around MS 18 are programmed to be widened. **Safety:** MS 27 does not meet Tier II safety performance criteria. 28% of corridor miles do not meet the recommended safety standard. **Operations:** The corridor is a significant regional link for trucks bypassing Jackson and also accessing major freight activity centers in the area, particularly near the junction of MS 27 and I-55. It provides a quick short-cut between I-20 and I-55. Issues with operations along the corridor are attributed to congestion in suburban Jackson, with intersecting MS 18 reported to have more issues than MS 27. Increasing urbanization southwest of Jackson in the corridor area might adversely impact truck flows in the future due to potential truck / passenger auto conflicts and capacity constraints. **Physical Condition:** The corridor does not meet Tier II pavement condition criteria, with IRI rating better than 95 for less than 65% of primary route miles - 56%. 43% of MS 27 pavement miles is unacceptable and overall pavement condition is an issue, with pavement condition worst of all Tier II corridors. Weight restricted bridges impact freight flows, with 22% of MS 27 bridges deficient.			
Potential Freight Improvement Projects	Safety improvements along MS 27. MS 27 pavement management program. Reconstruct two MS 27 bridges to lift weight restrictions.			

Notes:

(1) FHWA/ATRI Nationwide Bottleneck Analysis

(2) MS Freight Advisory Committee input and Freight User Survey Bottleneck Identification

(3) Major freight generators move over 1 million tons or $200 million in value

(4) Undesired Level of Service defined as below LOS C in rural areas and below LOS D for urban areas.

(5) Capacity includes the total storage space for air cargo, ramp space and capacity in tonnage. Volume refers to cargo volumes in tonnage.

**** Excludes through freight***

(6) Crash rate greater than 80% of state average for Tier I and 100% for Tier II

(7) Criteria applies to all public road crossings with active crossing warning devices (gates and warning signals for Tier I and Tier II crossings).

(8) Pavement condition is satisfactory if IRI rating on 65% of primary route miles < 95 for Tier I and 60% < 95 for Tier II.

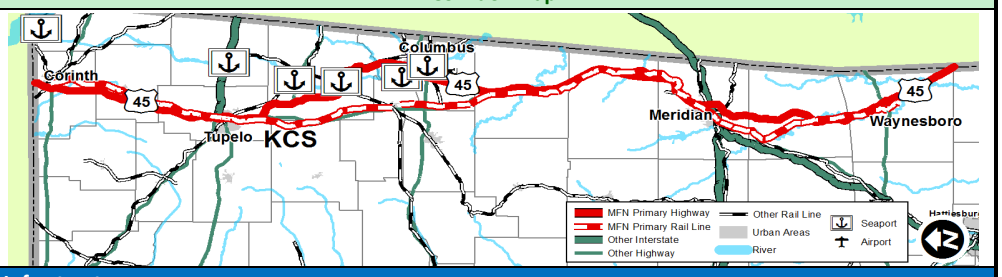
(9) Tier I: all core track meets or exceeds FRA Class 4 standards (> 40 mph for freight, > 60 mph for passenger).
Tier II: 80% of core track meets or exceeds FRA Class 3 standards (> 25 mph for freight, > 30 mph for passenger; no signals).

Tier II: US 45 / KCS (Corinth-Meridian-Waynesboro) Corridor

General Description

The US 45 / KCS Tier II Corridor runs north-south through the eastern portion of the state along US 45 and the KCS rail line, and parallel to the Tennessee-Tombigbee Waterway, a designated national marine highway. Rail freight was the dominant mode in 2011, accounting for 77% of the total corridor freight by tonnage. Rail is also the dominant mode in the corridor by the value of moved freight. Truck freight is expected to grow its modal share from 23% in 2011 to 23% in 2040. The corridor currently experiences no congestion and by 2040 less than 10% of its length will be congested. Key transportation infrastructure in this corridor includes US 45, KCS mainline and six river ports on the Tennessee-Tombigbee Waterway. Although the four river ports closest to US 45 and KCS mainline do not move high amount of freight by tonnage or value, they are still critical elements of the regional and statewide MS economy. The primary commodities shipped through the corridor is coal, crude oil, and petroleum chemicals.

Corridor Map



Corridor Freight Infrastructure

	Highway	Rail	Ports & Waterways	Commercial Airports
Primary Facilities / Operators	US 45: north-south Tennessee border via Corinth-Meridian route, continuing south to Mobile, Alabama (266 miles)	KCS / Artesia subdivision mainline: north-south Corinth-Meridian route (212 miles)	Port of Aberdeen, Clay County Port, Lowndes County Port, Port of Amory	
Key Connectors	NHS Connectors to the corridor's ports (listed under 'Ports & Waterways')	Rail service access to Lowndes County Port provided by KCS and Columbus and Greenville Railway (CAGY)	To Port of Aberdeen: from US 45 via Port Access Rd to the port (NHS Intermodal Connector) To Port of Amory: from US 45 east on US 278, Waterway Dr, and Port Access Road to port (NHS Intermodal Connector) To Lowndes County Port: From US 45: on MS 182 to the port (NHS Intermodal Connector)	
Existing ITS Deployments	WIM (US 45 at the Tennessee border)			

Freight Flow Characteristics

		Highway	Rail	Ports & Waterways	Commercial Airports
Annual Freight: Tonnage (millions) / Value ($ billions)	2011	20.6 / $20.3	69.9 / $71.3	0.8 / $0.4	
	2040	41.1 / $44.8	80.9 / $125.3	1.4 / $1.0	
Annual Inbound/ Outbound/ Intrastate: Tonnage (millions)*	2011	12.0 / 9.6 / 5.4			
	2040	23.0 / 16.8 / 9.8			
Annual Inbound/ Outbound/ Intrastate: Value ($ billions)*	2011	$9.4 / $10.6 / $3.9			
	2040	$16.0 / $25.6 / $5.7			
% Freight Flows by Mode	2011	23%	77%	1%	
	2040	33%	66%	1%	
Average % Truck Mix / Average Total Daily Volume	2011	11% / 9,000			
Major Bottlenecks as identified	ATRI (1)	None			
	FAC / Freight User Survey (2)	Columbus	None identified	None identified	
Top Commodities	Tonnage	Coal Minerals, Crude petrol Gas, Chemicals Petroleum, Concrete Glass Primary Metal, Food Tobacco, and Misc Freight			
	Value	Misc Freight, Chemicals Petroleum, Fabricated Metal Machinery Equipment, Concrete Glass Primary Metal, and Food Tobacco			
Major Freight Generators	Tonnage (3)	Axiall Corp, Mississippi Gravel Sales Inc, Holcim US Inc			
Top 10 Statewide Freight Counties Served		Lowndes, Monroe			

Corridor Infrastructure Performance

		Highway	Rail	Ports & Waterways	Commercial Airports
Capacity: Highways: Level of Service (4) Rail: % supporting 286k weight limits Ports: channel depth Commercial airports: storage volume to capacity (5)	2011	0 miles (0%) congested	Only about half of the KCS trackage between Corinth and Meridian handles 286k weight limit.	Recovery time from flood or drought to 12' minimum depth	
	2040	23 miles (8%) congested: - US 278 to Euclautubba Rd in Tupelo - Golding Rd Warriner Rd south of Corinth			
Safety: Highways: Annual Crash Rate (174/100M vmt) (6) Rail: RR crossings w/o active warning devices (7)		Crash rate: 112 37 miles (14%) across the corridor with high crash segments.	12 crossings of 15 (80%) do not have Active 2 warning devices.		
Infrastructure Condition: Highways: Pavement & Structures Rail: Speed/Track (9)	IRI rating (8)	IRI score: 88% 31 miles (11%) unacceptable. High IRI > 95 segments: - Tennessee State Line to US 72 - MS 178 to MS 6 - MS 76 to Brewer Rd - Noah Curtis Rd to Pine Grove Rd - Strong Rd to W Hazelwood Rd - Lone Oak Dr to Sumter Rd - Townsend Rd to Dan Whitsett Rd - I-20 to MS 145	KCS mainline does not meet speed track speed standards from Corinth to Tupelo.		
	Vertical clearance	0 of 35 bridges (0%) deficient			
	Weight-restricted bridges	0 of 217 (0%) restricted			

Corridor Needs Assessment and Infrastructure Need

	Highway	Rail	Ports & Waterways	Commercial Airports
Performance Assessment	**Level of Service:** US 45 provides acceptable LOS with minimal existing and forecasted congestion. FAC cited the Columbus area as experiencing congestion. No segments of US 45 are programmed to be widened. **Safety:** US 45 overall is a relatively safe highway corridor. US 45 corridor is the only Tier II corridor with a crash rate better than Tier II average. **Operations:** The corridor functions well and is a significant regional freight link providing access to area freight generators and emerging manufacturing activity centers. US 45 provides quick access to I-20, I-22/US 78, US 82, and US 72. The planned Columbus Bypass will improve freight flows along the corridor and provide quicker access to area ports. **Physical Condition:** 11% of US 45 pavement miles is unacceptable but overall condition is not an issue.	**Capacity**: Rail freight flows are more dominant on a percentage basis than truck freight flows within the corridor, but a significant portion of the KCS mainline is not able to handle 286k weight limit. Only some rail spurs to the river ports can handle 286k weight limits. **Safety**: 80% the railroad crossings do not have Active 2 warning devices. **Physical Condition**: FRA track speed standards are not met from Corinth to Tupelo.	Class I railroads (KCS and BNSF) directly serve several of the Tenn–Tom Waterway System ports in the corridor. Port of Aberdeen has no existing direct rail connection. The quality of last mile access rail service provided by other short line carriers depends on these Class I connections. Last mile roadway access is also critical since none of the river ports are served directly by US 45, but rather via collectors and local streets that connect to US 45.	
Potential Freight Improvement Projects	None identified	Upgrade the KCS mainline from Corinth to West Point to handle 286k weight limit. KCS mainline core track improvements from Corinth to Tupelo to to raise line speed. Upgrade all public corridor crossings along the KCS mainline with at least Active 2 warning devices.	Port of Amory - BNSF: upgrade 12 rail bridges between Amory and Columbus to permit 286k loads (MULTIPLAN 2035 and MS State Rail Plan). Port of Aberdeen: construct 3.2-mile connection track (MULTIPLAN 2035 and MS State Rail Plan).	

Notes:

(1) FHWA/ATRI Nationwide Bottleneck Analysis

(2) MS Freight Advisory Committee input and Freight User Survey Bottleneck Identification

(3) Major freight generators move over 1 million tons or $200 million in value

(4) Undesired Level of Service defined as below LOS C in rural areas and below LOS D for urban areas.

(5) Capacity includes the total storage space for air cargo, ramp space and capacity in tonnage. Volume refers to cargo volumes in tonnage.

**** Excludes through freight***

(6) Crash rate greater than 80% of state average for Tier I and 100% for Tier II

(7) Criteria applies to all public road crossings with active crossing warning devices (gates and warning signals for Tier I and Tier II crossings).

(8) Pavement condition is satisfactory if IRI rating on 65% of primary route miles < 95 for Tier I and 60% < 95 for Tier II.

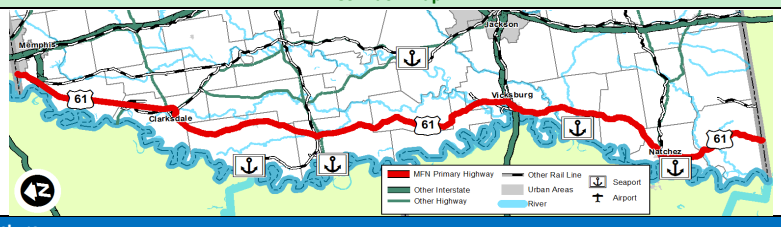
(9) Tier I: all core track meets or exceeds FRA Class 4 standards (> 40 mph for freight, > 60 mph for passenger).
Tier II: 80% of core track meets or exceeds FRA Class 3 standards (> 25 mph for freight, > 30 mph for passenger; no signals).

Tier II: US 61 (Southaven-Vicksburg-Woodville) Corridor

General Description

The US 61 Tier II Corridor runs north-south through the western portion of the state along US 61, parallel to the Mississippi River, and near its multiple ports. At 317 miles, this is the longest of all MFN corridors. Although there are no key mainline routes along the corridor and major freight origins and destinations are served by multiple short lines, rail freight was the dominant mode in 2011, accounting for 49% of the total corridor freight by tonnage. Truck freight is expected to grow its modal share from 44% in 2011 to 50% in 2040 and overtake rail as number one mode. With multiple MS River ports, the US 61 Corridor has the largest percentage of waterborne freight flows of all Tier II Corridors (outside the water-only Tennessee-Tombigbee Waterway Corridor). US 61 currently experiences and is forecasted to experience no congestion. Key transportation infrastructure in this corridor includes US 61 and four Mississippi River ports. The primary commodities shipped through the corridor are chemicals / petroleum, crude oil, and coal.

Corridor Map



Corridor Freight Infrastructure

	Highway	Rail	Ports & Waterways	Commercial Airports
Primary Facilities / Operators	US 61 north-south from Memphis /Tennessee border to Louisiana border (317 miles)	No primary rail	Port of Natchez, Port of Rosedale, Port of Vicksburg, Port of Greenville, Port of Claiborne County	
Key Connectors	US 49 from US 61 to US 49 Mississippi River bridge in Lula	The Vicksburg Southern Railroad (VSOR) connects to the Port of Vicksburg and north to Redwood. VSOR interchanges with KCS in Vicksburg.	To Port of Vicksburg : from US 61/I-20 interchange, west on Clay St, Cherry St, 1st East St, north on Washington, and west on Haining Rd to port (NHS Intermodal Connector)	
	MS 8 from US 61 in Cleveland to Rosedale			
	US 61 Business from I-20 north and south on Washington St to Haining Rd and Port of Vicksburg	The Great River Railroad (GTR) between Greenville and Rosedale and serves the Port of Rosedale. Note: GTR has been out of service for 10 years.	To Port of Rosedale: Port Access Rd to Russell Crutcher to MS 8 to US 61 (NHS Intermodal Connector)	
	US 84 / MS 425 from US 61 to US 84 Mississippi River bridge in Natchez	Natchez Railway, LLC (NTZR) - former CN branch from Brookhaven to the Port of Natchez	To Port of Natchez: from U.S. 84 / MS 425: Government Fleet Rd to Magnolia Bluff Rd, L.E. Barry Rd to port (NHS Intermodal Connector)	
	US 84 from US 61 in Natchez east to I-55/ Brookhaven	The Columbus and Greenville Railway (CAGY) between Columbus and Greenville to the Port of Greenville	To Port of Greenville: from US 61 to US 82 and 2.8 mi on Harbor Front Road to port (NHS Intermodal Connector)	
	US 82 from US 61 in Leland west to Greenville			
	US 278/MS 6 from US 61 (Clarksville) to I-55 (Batesville)			
Existing ITS Deployments	WIM PrePass (US 84 Mississippi River crossing) Mississippi River bridges monitoring: - US 49 bridge in Lula, Mississippi / Helena, Arkansas; and US 84 bridge in Natchez, Mississippi / Ferriday, Louisiana: - Surveillance cameras - Traffic volumes/speeds on approaches - Real Time River Current data sensors - Dynamic Message signs - Detour monitoring			

Freight Flow Characteristics

		Highway	Rail	Ports & Waterways	Commercial Airports
Annual Freight: Tonnage (millions) / Value ($ billions)	2011	51.0 / $71.7	56.5 / $60.9	8.7 / $4.0	
	2040	80.4 / $119.7	67.7 / $112.9	11.4 / $4.9	
Annual Inbound/ Outbound/ Intrastate: Tonnage (millions)*	2011	19.3 / 16.1 / 2.7			
	2040	26.5 / 27.3 / 4.3			
Annual Inbound/ Outbound/ Intrastate: Value ($ billions)*	2011	$15.3 / $18.0 / $1.2			
	2040	$25.6 / $36.1 / $1.6			
% Freight Flows by Mode	2011	44%	49%	8%	
	2040	50%	42%	7%	
Average % Truck Mix / Average Total Daily Volume	2011	8% / 6,800			
Major Bottlenecks as identified	ATRI (1)	None			
	FAC / Freight User Survey (2)	MS 6 (US 278) east of US 61 to I-55	None identified	From US 61 to Port of Vicksburg From US 61 to Port of Natchez	
Top Commodities	Tonnage	Chemicals Petroleum, Coal Minerals, Crude petrol Gas, Food Tobacco, Agriculture, and Secondary Traffic Others			
	Value	Chemicals Petroleum, Misc Freight, Fabricated Metal Machinery Equipment, Concrete Glass Primary Metal, and Food Tobacco			
Major Freight Generators	Tonnage (3)	N Runyon WJ & Son Inc			
Top 10 Statewide Freight Counties Served		Warren, Washington			

Corridor Infrastructure Performance

		Highway	Rail	Ports & Waterways	Commercial Airports
Capacity: Highways: Level of Service (4) Rail: % supporting 286k weight limits Ports: channel depth Commercial airports: storage volume to capacity (5)	2011	0 miles (0%) congested		Recovery time from flood or drought to 12' minimum depth	
	2040	14 miles (4%) congested: - US 425 to US 61 BUS in Natchez - MS 547 to MS 18 in Port Gibson - Grange Hall Rd to US 61 BUS in Vicksburg - US 80 to Culkin Rd in Vicksburg - MS 8 to E Rosemary Rd in Cleveland - I-69 to MS 304 in Robinsonville - MS 302 to Tennessee Sate Line			
Safety: Highways: Annual Crash Rate (174/100M vmt) (6) Rail: RR crossings w/o active warning devices (7)		Crash rate: 225 Corridor does not meet Tier II safety performance criteria. 62 miles (19%) across the corridor with high crash segments.			
Infrastructure Condition: Highways: Pavement & Structures Rail: Speed/Track (9)	IRI rating (8)	IRI score: 85% 41 miles (13%) unacceptable. High IRI > 95 segments: - Mcknight Rd to South St - US 82 to Kennedy Flat Rd - MS 12 to MS 436 - Southdale Rd to MS 16 - Fork Creek Rd to Magnolia Dr - Blanto Rd to MS 1 - Culkin Rd to I-20 - Allen Station Rd to Big Black Creek - MS 18 to MS 547 - Old US 84 to Lynda Lee Dr - John R Junkin Dr to Col John Pitchford Pkwy - Will Washington Rd to Hyde Park Rd - Buffalo Rd to MS 563 - Byrd Rd to MS 24			
	Vertical clearance	0 of 12 bridges (0%) deficient			
	Weight-restricted bridges	0 of 116 (0%) restricted			

Corridor Needs Assessment and Infrastructure Need

	Highway	Rail	Ports & Waterways	Commercial Airports
Performance Assessment	**Level of Service**: US 61 provides good LOS with minimal existing and forecasted congestion. No segments of US 61 are programmed to be widened outside of its future connection to I-69. **Safety**: US 61 overall does not meet Tier II safety performance criteria. **Operations**: The corridor due to its length and functional classification passes through a variety of settings, including small towns, major interchanges with key statewide facilities (e.g., I-20), and rural areas. It provides access to major freight generators along the corridor, and MS River ports. Issues with operations along the corridor are localized or regional, rather than corridor-wide. Once I-69 is completed, US 61 will gain in significance as a major access link to Memphis via I-69. The recently implemented ITS bridge and detour monitoring across Mississippi River in Natchez and Lula should benefit truck flows by increasing truck volumes/speeds on approaches. **Physical Condition**: 13% of US 61 pavement miles is unacceptable but overall condition is not an issue.		US 61 and local streets connecting to it provide critical last mile access to multiple ports in the area. Inadequate roadway access to Port of Vicksburg has been cited as an issue by the FAC.	
Potential Freight Improvement Projects	Safety improvements along US 61.		US 61 Business / Haining Rd bridge access to Port of Vicksburg - bridge replacement with 4 lane bridge (MULTIPLAN 2035). US 61 to Haining Rd / Port of Vicksburg - new roadway to the port (MULTIPLAN 2035; FAC).	

Notes:

(1) FHWA/ATRI Nationwide Bottleneck Analysis

(2) MS Freight Advisory Committee input and Freight User Survey Bottleneck Identification

(3) Major freight generators move over 1 million tons or $200 million in value

(4) Undesired Level of Service defined as below LOS C in rural areas and below LOS D for urban areas.

(5) Capacity includes the total storage space for air cargo, ramp space and capacity in tonnage. Volume refers to cargo volumes in tonnage.

**** Excludes through freight***

(6) Crash rate greater than 80% of state average for Tier I and 100% for Tier II

(7) Criteria applies to all public road crossings with active crossing warning devices (gates and warning signals for Tier I and Tier II crossings).

(8) Pavement condition is satisfactory if IRI rating on 65% of primary route miles < 95 for Tier I and 60% < 95 for Tier II.

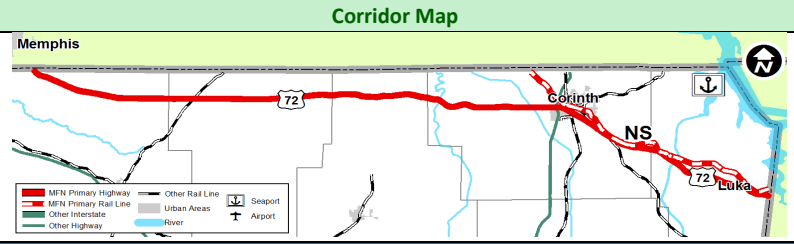
(9) Tier I: all core track meets or exceeds FRA Class 4 standards (> 40 mph for freight, > 60 mph for passenger).
Tier II: 80% of core track meets or exceeds FRA Class 3 standards (> 25 mph for freight, > 30 mph for passenger; no signals).

Tier II: US 72 / NS (Mt. Pleasant-Corinth-Iuka) Corridor

General Description

The US 72 / NS Tier II Corridor runs west-east through the northern portion of the state along US 72, with NS Crescent Corridor mainline parallel to the highway facility in the northeastern section of the corridor. Rail freight was the dominant mode in 2011, accounting for 68% of the total corridor freight by tonnage. Truck freight is expected to grow its modal share from 30% in 2011 to 51% in 2040 and overtake rail as number one mode. The Yellow Creek Port located on Tenn-Tombigbee Waterway is served by a short line spur operated by KCS. US 72 currently experiences and is forecasted to experience no congestion. Key transportation infrastructure in this corridor includes US 72, NS mainline, and Yellow Creek Port. The primary commodities shipped through the corridor is coal, minerals, and crude oil.

Corridor Map



Corridor Freight Infrastructure

	Highway	Rail	Ports & Waterways	Commercial Airports
Primary Facilities / Operators	US 72 west-east from Tennessee border to Alabama border (90 miles)	NS Crescent Corridor mainline between Chattanooga and Memphis, with a short segment of 17 miles passing through northeastern Mississippi, parallel to US 72 (36 miles)	Yellow Creek Port	
Key Connectors	MS 25 from US 72 south to MS 30 / Tishomingo and access to DuraClass plant	Yellow Creek Port Railroad (YCRK) operated by KCS: 10 miles from Sharp, Mississippi, to Counce, Tennessee, to Yellow Creek Port where it terminates	To Yellow Creek Port: North Connector: from US 72, north on MS 25, east on Port Access Rd (CR 370), west along CR 351 to terminals South Connector: from US 72 south along MS 365 to the Port Access Rd, to port (NHS Intermodal Connectors)	
Existing ITS Deployments	WIM			

Freight Flow Characteristics

		Highway	Rail	Ports & Waterways	Commercial Airports
Annual Freight: Tonnage (millions) / Value ($ billions)	2011	21.3 / $33.9	48.0 / $35.0	0.9 / $0.4	
	2040	48.2 / $79.8	44.9 / $61.8	0.9 / $0.3	
Annual Inbound/ Outbound/ Intrastate: Tonnage (millions)*	2011	5.5 / 4.6 / 0.3			
	2040	11.7 / 10.3 / 0.8			
Annual Inbound/ Outbound/ Intrastate: Value ($ billions)*	2011	$3.9 / $4.9 / $0.3			
	2040	$8.4 / $13.5 / $0.4			
% Freight Flows by Mode	2011	30%	68%	1%	
	2040	51%	48%	1%	
Average % Truck Mix / Average Total Daily Volume	2011	16% / 9,700			
Major Bottlenecks as identified	ATRI (1)	None			
	FAC / Freight User Survey (2)	US 72 in Corinth	None identified	None identified	
Top Commodities	Tonnage	Coal Minerals, Crude petrol Gas, Secondary Traffic Others, Chemicals Petroleum, Food Tobacco, and Concrete Glass Primary Metal			
	Value	Fabricated Metal Machinery Equipment, Misc Freight, Secondary Traffic Others, Chemicals Petroleum, and Food Tobacco			
Major Freight Generators	Tonnage (3)	None			
Top 10 Statewide Freight Counties Served		None			

Corridor Infrastructure Performance

		Highway	Rail	Ports & Waterways	Commercial Airports
Capacity: Highways: Level of Service (4) Rail: % supporting 286k weight limits Ports: channel depth Commercial airports: storage volume to capacity (5)	2011	0 miles (0%) congested	The NS mainline handles 286k weight limit.	Recovery time from flood or drought to 12' minimum depth	
	2040	1 miles (1%) congested: - US 45 to MS 145 in Corinth			
Safety: Highways: Annual Crash Rate (174/100M vmt) (6) Rail: RR crossings w/o active warning devices (7)		Crash rate: 230 Corridor does not meet Tier II safety performance criteria. 16 miles (18%) across the corridor with high crash segments.	2 crossings of 2 (100%) do not have Active 2 warning devices.		
Infrastructure Condition: Highways: Pavement & Structures Rail: Speed/Track (9)	IRI rating (8)	IRI score: 82% 16 miles (18%) unacceptable. High IRI > 95 segments: - US 45 to S Cass St - MS 304 to MS 300 - Front St to MS 365 - MS 172 to Alabama State Line	Not enough sufficient data points to draw conclusions.		
	Vertical clearance	0 of 3 bridges (0%) deficient			
	Weight-restricted bridges	0 of 60 (0%) restricted			

Corridor Needs Assessment and Infrastructure Need

	Highway	Rail	Ports & Waterways	Commercial Airports
Performance Assessment	**Level of Service**: US 72 provides good LOS with minimal existing and forecasted congestion. No segments of US 72 are programmed to be widened, but its short segment from MS 302 to TN border is on MDOT's Preliminary Priority List for widening. The FAC did report that congestion can be a localized issue along US 72 in Corinth. As trucks as percentage of freight flows by mode is projected to increase by 70% between now and 2040, the number of trucks along the corridor is bound to increase as well. **Safety**: US 72 Corridor does not meet Tier II safety performance criteria. **Operations**: The corridor functions well and is a significant regional freight link providing access to Memphis and relief to US 78/I-22 corridor. **Physical Condition**: 18% of US 72 pavement miles is unacceptable but overall condition is certainly not an issue today. With the projected increase in percentage of trucks using the corridor, pavement condition might deteriorate in the future.	**Capacity**: The NS mainline is part of the Crescent Corridor that extends from Louisiana to New Jersey and passes through Mississippi briefly on its section connecting Chattanooga and Memphis. The NS mainline is able to handle 286k weight limit. **Safety**: All public railroad crossings on the NS mainline within Mississippi borders do not have Active 2 warning devices.	US 72 via MS 25 and MS 365 provides critical roadway last mile access to the Yellow Creek Port. The Yellow Creek Port Railroad (YCRK) short line operated by KCS provides direct access to the port but is reportedly in need of rehabilitation (MS State Rail Plan & Multiplan 2035).	
Potential Freight Improvement Projects	Safety improvements along US 72.	Upgrade all public corridor crossings along the NS mainline with at least Active 2 warning devices.	Rehabilitate the 10-mile Yellow Creek Railroad connecting Yellow Creek State Inland Port to KCS (MS State Rail Plan & Multiplan 2035).	

Notes:

(1) FHWA/ATRI Nationwide Bottleneck Analysis

(2) MS Freight Advisory Committee input and Freight User Survey Bottleneck Identification

(3) Major freight generators move over 1 million tons or $200 million in value

(4) Undesired Level of Service defined as below LOS C in rural areas and below LOS D for urban areas.

(5) Capacity includes the total storage space for air cargo, ramp space and capacity in tonnage. Volume refers to cargo volumes in tonnage.

**** Excludes through freight***

(6) Crash rate greater than 80% of state average for Tier I and 100% for Tier II

(7) Criteria applies to all public road crossings with active crossing warning devices (gates and warning signals for Tier I and Tier II crossings).

(8) Pavement condition is satisfactory if IRI rating on 65% of primary route miles < 95 for Tier I and 60% < 95 for Tier II.

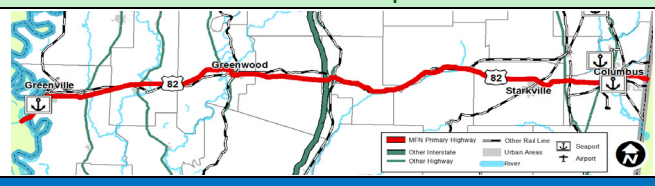
(9) Tier I: all core track meets or exceeds FRA Class 4 standards (> 40 mph for freight, > 60 mph for passenger).
Tier II: 80% of core track meets or exceeds FRA Class 3 standards (> 25 mph for freight, > 30 mph for passenger; no signals).

Tier II: US 82 (Greenville-Winona-Columbus) Corridor

General Description

The US 82 Tier II Corridor runs west-east through the central part of the state along US 82. This Tier II Corridor is also the only MFN Corridor that provides a direct connection between Mississippi River and the Tennessee-Tombigbee Waterway. Rail freight was the dominant mode in 2011, accounting for 64% of the total corridor freight by tonnage. Truck freight is expected to grow its modal share from 31% in 2011 to 37%. US 82 currently experiences and is forecasted to experience no congestion. Key transportation infrastructure in this corridor includes US 82 and the Port of Greenville and Lowndes County Port. The primary commodities shipped through the corridor is coal and other minerals, crude oil, and petroleum.

Corridor Map



Corridor Freight Infrastructure

	Highway	Rail	Ports & Waterways	Commercial Airports
Primary Facilities / Operators	US 82 from Greenville / Arkansas state line east to Columbus / Alabama state line (179 miles)	None (short lines only)	Lowndes County Port, Port of Greenville	
Key Connectors	MS 1 from US 82 / Greenville to Rosedale	The Columbus and Greenville Railway (CAGY) between Columbus and Greenville, parallel to US 82. The Port of Greenville is served by CAGY, and CN - Greenwood interchange connection is CAGY's largest. Lowndes County Port in Columbus is also served by CAGY (and a KCS spur).	To Lowndes County Port: from US 82: 2.7 mi on Port Access Road to port (NHS Intermodal Connector)	
		The Great River Railroad (GTR) between Greenville and Rosedale serves the Port of Rosedale. Note: GTR has been out of service for 10 years (MS State Rail Plan).	To Port of Greenville: from US 82: 2.8 mi on Harbor Front Road to port (NHS Intermodal Connector)	
Existing ITS Deployments	WIM (Greenville) Mississippi River bridge monitoring: US 82 bridge in Greenville, Mississippi / Lake Village, Arkansas: - Surveillance cameras - Traffic volumes/speeds on approaches - Real Time River Current data sensors - Dynamic Message signs - Detour monitoring			

Freight Flow Characteristics

		Highway	Rail	Ports & Waterways	Commercial Airports
Annual Freight: Tonnage (millions) / Value ($ billions)	2011	15.0 / $13.4	31.2 / $25.6	2.9 / $1.3	
	2040	25.7 / $34.4	41.3 / $45.7	3.4 / $1.7	
Annual Inbound/ Outbound/ Intrastate: Tonnage (millions)*	2011	14.8 / 10.0 / 4.8			
	2040	19.0 / 17.7 / 8.9			
Annual Inbound/ Outbound/ Intrastate: Value ($ billions)*	2011	$9.8 / $12.3 / $2.1			
	2040	$16.3 / $34.7 / $3.6			
% Freight Flows by Mode	2011	31%	64%	6%	
	2040	37%	59%	5%	
Average % Truck Mix / Average Total Daily Volume	2011	9% / 10,000			
Major Bottlenecks as identified	ATRI (1)	None			
	FAC / Freight User Survey (2)	US 82 in Columbus	None identified	None identified	
Top Commodities	Tonnage	Coal Minerals, Crude petrol Gas, Chemicals Petroleum, Agriculture, Food Tobacco, and Concrete Glass Primary Metal			
	Value	Chemicals Petroleum, Fabricated Metal Machinery Equipment, Concrete Glass Primary Metal, Food Tobacco, and Secondary Traffic Others			
Major Freight Generators	Tonnage (3)	Blubox, Mars Food US			
Top 10 Statewide Freight Counties Served		Lowndes, Choctaw, Washington			

Corridor Infrastructure Performance

		Highway	Rail	Ports & Waterways	Commercial Airports
Capacity: Highways: Level of Service (4) Rail: % supporting 286k weight limits Ports: channel depth Commercial airports: storage volume to capacity (5)	2011	0 miles (0%) congested		Recovery time from flood or drought to 12' minimum depth	
	2040	8 miles (5%) congested: - US 49E to Main St in Greenwood - US 45 to Military Rd in Greenwood			
Safety: Highways: Annual Crash Rate (174/100M vmt) (6) Rail: RR crossings w/o active warning devices (7)		Crash rate: 211 Corridor does not meet Tier II safety performance criteria. 35 miles (20%) across the corridor with high crash segments.			
Infrastructure Condition: Highways: Pavement & Structures Rail: Speed/Track (9)	IRI rating (8)	IRI score: 61% 69 miles (38%) unacceptable. High IRI > 95 segments: - MS 454 to S Raceway Rd - Airport Rd to US 49 W - Schiey St to Cow Rd - MS 35 to Middleton Rd - Bailey Rd to Grady Rd - County line Rd to MS 182 - Camps Airport Rd to MS 791 - Plymouth Bluff Access Rd to Military Rd			
	Vertical clearance	0 of 13 bridges (0%) deficient			
	Weight-restricted bridges	0 of 113 (0%) restricted			

Corridor Needs Assessment and Infrastructure Need

	Highway	Rail	Ports & Waterways	Commercial Airports
Performance Assessment	**Level of Service:** US 82 provides good LOS with minimal existing and forecasted congestion. The FAC identified US 82 in Columbus as congested. No segments of US 82 are programmed to be widened. **Safety:** US 82 does not meet Tier II safety performance criteria. **Operations:** The corridor due to its length and functional classification passes through a variety of settings, including regional freight activity centers (manufacturing: Columbus; rail/highway intermodal terminal: Greenwood (CN/truck); major interchanges with key statewide facilities (e.g., I-55 in Winona), major inland ports (Port of Greenville, and Lowndes County Port) and rural coal mining areas. Issues with operations along the corridor are localized, rather than corridor-wide - e.g., congestion along US 82 in Columbus cited by the FAC. The recently implemented ITS bridge and detour monitoring across Mississippi River in Greenville should benefit truck flows by increasing truck volumes/speeds on approaches. **Physical Condition**: The corridor does not meet Tier II pavement condition criteria, with IRI rating better than 95 for less than 65% of primary route miles - 61%. 38% of US 82 pavement miles (69 miles) is unacceptable. US 82 is the second worst faring Tier II corridor by IRI rating, behind MS 27.	Although there are no key rail facilities within the corridor, the CAGY short line has potential to provide long distance east-west freight rail service along the corridor. Unfortunately, continuous east-west CAGY operations were suspended in 2002 due to line and bridge conditions, and 93 miles between West Point and Greenwood is out of service (MS State Rail Plan). Port of Rosedale has no existing rail service; Great River Railroad (GTR) runs 32 miles between Greenville and Rosedale and serves the Port of Rosedale but has not been in operation due to lack of funding since 2002.	US 82 and local streets connecting to it provide critical last mile access to multiple inland ports: Lowndes County Port, Port of Greenville, and Port of Rosedale.	
Potential Freight Improvement Projects	Safety improvements along US 82. US 82 pavement management program.	Reinstate rail access to the Port of Rosedale.	Consider and prioritize improvements to the NHS connectors in highway project programming due to their role in providing roadway access to the two corridor ports.	

Notes:

(1) FHWA/ATRI Nationwide Bottleneck Analysis

(2) MS Freight Advisory Committee input and Freight User Survey Bottleneck Identification

(3) Major freight generators move over 1 million tons or $200 million in value

(4) Undesired Level of Service defined as below LOS C in rural areas and below LOS D for urban areas.

(5) Capacity includes the total storage space for air cargo, ramp space and capacity in tonnage. Volume refers to cargo volumes in tonnage.

**** Excludes through freight***

(6) Crash rate greater than 80% of state average for Tier I and 100% for Tier II

(7) Criteria applies to all public road crossings with active crossing warning devices (gates and warning signals for Tier I and Tier II crossings).

(8) Pavement condition is satisfactory if IRI rating on 65% of primary route miles < 95 for Tier I and 60% < 95 for Tier II.

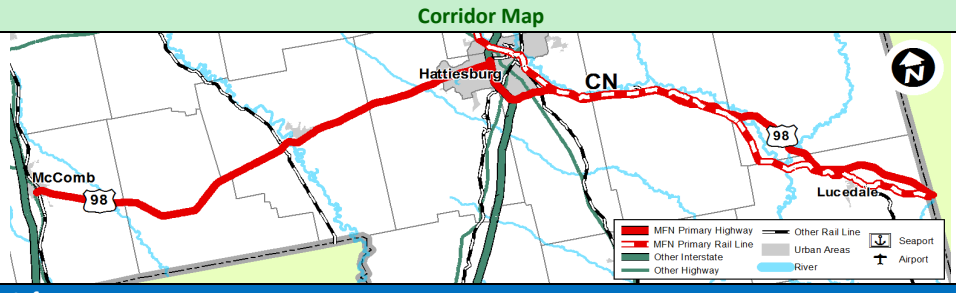
(9) Tier I: all core track meets or exceeds FRA Class 4 standards (> 40 mph for freight, > 60 mph for passenger).
Tier II: 80% of core track meets or exceeds FRA Class 3 standards (> 25 mph for freight, > 30 mph for passenger; no signals).

Tier II: US 98 / CN (McComb-Hattiesburg-Lucedale) Corridor

General Description

The US 98/CN Tier II Corridor runs west-east through the south-central part of the state along US 98 from I-55 east via Hattiesburg to Alabama state border (and further east to Mobile); the CN mainline runs parallel to US 98 on its Hattiesburg to Alabama state line segment (the same CN route extends northwest of Hattiesburg and is part of the US 49/CN Tier I corridor). This Tier II Corridor provides vital regional level west-east connectivity between freight activity centers in southern Mississippi. Rail freight was the dominant mode in 2011, accounting for 60% of the total corridor freight by tonnage. Truck freight is expected to grow its modal share from 41% in 2011 to 47%. US 98 currently experiences and is forecasted to experience little congestion. Key transportation infrastructure in this corridor includes US 98, and CN mainline from Hattiesburg along US 98 to Alabama border. The primary commodities shipped through the corridor are petroleum chemicals, coal, and crude oil.

Corridor Map



Corridor Freight Infrastructure

	Highway	Rail	Ports & Waterways	Commercial Airports
Primary Facilities / Operators	US 98 from I-55/McComb east to Lucedale and Alabama via Hattiesburg (141 miles)	CN mainline from Hattiesburg southeast to Lucedale and to Alabama (68 miles)		
Key Connectors	MS 13 between Columbia and Lumberton / I-59, serving Marion Clay & Gravel in Columbia MS 589 from US 98 to Purvis / I-59	Mississippi Export Railroad (MSE) - connecting CN and east-west CSXT M&M subdivision		
Existing ITS Deployments	WIM			

Freight Flow Characteristics

		Highway	Rail	Ports & Waterways	Commercial Airports
Annual Freight: Tonnage (millions) / Value ($ billions)	2011	22.0 / $37.7	32.3 / $28.0		
	2040	36.1 / $71.6	41.1 / $45.1		
Annual Inbound/ Outbound/ Intrastate: Tonnage (millions)*	2011	9.2 / 6.2 / 3.9			
	2040	12.6 / 9.5 / 8.0			
Annual Inbound/ Outbound/ Intrastate: Value ($ billions)*	2011	$6.5 / $8.0 / $3.2			
	2040	$12.1 / $12.9 / $4.9			
% Freight Flows by Mode	2011	41%	60%		
	2040	47%	53%		
Average % Truck Mix / Average Total Daily Volume	2011	11% / 1,400			
Major Bottlenecks as identified	ATRI (1)	None			
	FAC / Freight User Survey (2)	None identified			
Top Commodities	Tonnage	Chemicals Petroleum, Coal Minerals, Crude petrol Gas, Agriculture, Food Tobacco, and Secondary Traffic Others			
	Value	Chemicals Petroleum, Concrete Glass Primary Metal, Fabricated Metal Machinery Equipment, Food Tobacco, and Agriculture			
Major Freight Generators	Tonnage (3)	Singley Construction Co, John L Sanford Jr Inc., Riverside Gravel, Hover Gravel Co, American Sand & Gravel Co, Marion Clay & Gravel LLC.			
Top 10 Statewide Freight Counties Served		None			

Corridor Infrastructure Performance

		Highway	Rail	Ports & Waterways	Commercial Airports
Capacity: Highways: Level of Service (4) Rail: % supporting 286k weight limits Ports: channel depth Commercial airports: storage volume to capacity (5)	2011	8 miles (5%) congested: - MS 589 to I-59 in Hattiesburg	CN mainline from Hattiesburg southeast to Lucedale and to Alabama supports 286k limits.		
	2040	11 miles (8%) congested: - MS 589 to I-59 in Hattiesburg - I-59 to US 49 in Hattiesburg			
Safety: Highways: Annual Crash Rate (174/100M vmt) (6) Rail: RR crossings w/o active warning devices (7)		Crash rate: 292 Corridor does not meet Tier II safety performance criteria. 26 miles (19%) across the corridor with high crash segments.	10 crossings of 10 (100%) do not have Active 2 warning devices.		
Infrastructure Condition: Highways: Pavement & Structures Rail: Speed/Track (9)	IRI rating (8)	IRI score: 70% 40 miles (28%) unacceptable. High IRI > 95 segments: - I-55 to Leatherwood Rd - Old New Hope Rd to Old Lakeview Dr - US 98 to Ralston Rd - MS 15 to W Main St - MS 198 to Agricola-Latonia Rd	CN mainline does not meet track speed standards in southeast Hattiesburg and McLain.		
	Vertical clearance	0 of 5 bridges (0%) deficient			
	Weight-restricted bridges	2 of 64 (3%) restricted			

Corridor Needs Assessment and Infrastructure Need

	Highway	Rail	Ports & Waterways	Commercial Airports
Performance Assessment	**Level of Service**: US 98 provides good LOS with minimal existing and forecasted congestion. No segments of US 98 are programmed to be widened. **Safety**: US 98 does not meet Tier II safety performance criteria. **Operations**: The corridor provides regional connections to freight activity centers between I-55, Hattiesburg, and points along US 98 southeast to Alabama border and further down to Mobile, Alabama. Major interchanges with I-55, I-59 and US 49 operate smoothly and issues with operations along the corridor are localized, rather than corridor-wide - e.g., congestion in Hattiesburg. Deployment of the Hattiesburg Region ITS should further improve operations along the corridor. **Physical Condition**: 28% of US 98 pavement miles (or 40 miles) is unacceptable, but overall condition is not an issue. This corridor is one of the few MFN corridors that has no issues with bridge vertical clearance and very few bridge weight restrictions.	**Capacity**: Even though there are more corridor highway miles than rail trackage, rail freight flows are more dominant on a percentage basis than truck freight flows within the corridor. 100% of the CN mainline can handle 286k weight limit. **Safety**: All railroad crossings in this corridor do not have Active 2 warning devices. **Physical Condition**: CN mainline in Hattiesburg and in McLain area suffers from low track speed.		
Potential Freight Improvement Projects	Safety improvements along US 98. Leverage deployment of Hattiesburg region Incident Management System & TMC Operations to include expanded commercial vehicle elements. Reconstruct two US 98 bridges to lift weight restrictions.	CN mainline core track improvements in Hattiesburg and McLainto raise line speed. Upgrade all public corridor crossings along the CN mainline with at least Active 2 warning devices.		

Notes:

(1) FHWA/ATRI Nationwide Bottleneck Analysis

(2) MS Freight Advisory Committee input and Freight User Survey Bottleneck Identification

(3) Major freight generators move over 1 million tons or $200 million in value

(4) Undesired Level of Service defined as below LOS C in rural areas and below LOS D for urban areas.

(5) Capacity includes the total storage space for air cargo, ramp space and capacity in tonnage. Volume refers to cargo volumes in tonnage.

**** Excludes through freight***

(6) Crash rate greater than 80% of state average for Tier I and 100% for Tier II

(7) Criteria applies to all public road crossings with active crossing warning devices (gates and warning signals for Tier I and Tier II crossings).

(8) Pavement condition is satisfactory if IRI rating on 65% of primary route miles < 95 for Tier I and 60% < 95 for Tier II.

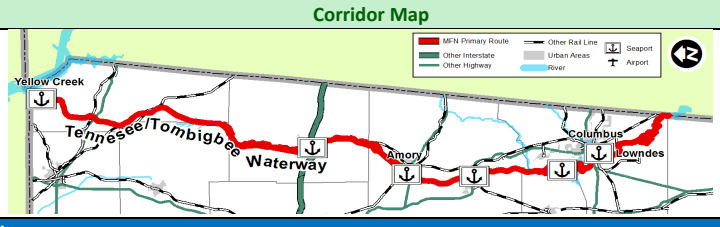
(9) Tier I: all core track meets or exceeds FRA Class 4 standards (> 40 mph for freight, > 60 mph for passenger). Tier II: 80% of core track meets or exceeds FRA Class 3 standards (> 25 mph for freight, > 30 mph for passenger; no signals).

Tier II: Tennessee-Tombigbee Waterway (Yellow Creek Port-Lowndes County Port) Corridor

General Description

The Tennessee-Tombigbee Waterway, a designated national marine highway, runs north-south through the eastern portion of Mississippi. The Waterway connects the Tombigbee River with the Tennessee River, creating a water transportation route that serves 23 southern and mid-western states from the Gulf of Mexico (Port of Mobile) northward. Six public ports are located in the Mississippi state: Port of Aberdeen, Port of Itawamba, Lowndes County Port, Port of Amory, Yellow Creek Port, and Clay County Port. In 2011, the Tenn-Tom carried nearly 2 million tons of goods with the primary commodity carried on the Mississippi portion of the Tenn-Tom being lumber, followed by coal, crude oil, concrete glass / metals, and petroleum products.

Corridor Map



Corridor Freight Infrastructure

	Highway	Rail	Ports & Waterways	Commercial Airports
Primary Facilities / Operators	US 45 (also Tier II corridor) from Corinth to Columbus		Tennessee-Tombigbee Waterway; Port of Aberdeen, Port of Itawamba, Lowndes County Port, Port of Amory, Yellow Creek Port, and Clay County Port	
Key Connectors	To Port of Itawamba: from U.S. 78: north on MS 25, west on South Access Route to port (NHS Intermodal Connector)	The Mississippian Railway Cooperative (MMSW) - rail connection to Port of Itawamba.		
	To Lowndes County Port: From U.S. 45: on MS 182 to the port (NHS Intermodal Connector)	KCS and Columbus and Greenville Railway (CAGY) - rail connection to Lowndes County Port		
	To Yellow Creek Port: North Connector: from US 72, north on MS 25, east on Port Access Rd (CR 370), west along CR 351 to terminals South Connector: from US 72 south along MS 365 to the Port Access Rd, to port (NHS Intermodal Connectors)	Yellow Creek Port Railroad (YCRK) - operated by KCS, rail connection to the Yellow Creek Port		
	To Port of Amory: I-22 to US 45: east on U.S. 278, north on Waterway Dr, west on Port Access Road to port (NHS Intermodal Connector)	BNSF - provides connection to vicinity of the Port of Amory		
	To Port of Aberdeen: from US 45 via Port Access Rd to the port (NHS Intermodal Connector)			
Existing ITS Deployments	None			

Freight Flow Characteristics

		Highway	Rail	Ports & Waterways	Airports
Annual Freight: Tonnage (millions) / Value ($ billions)	2011			1.9 / $0.8	
	2040			2.4 / $1.3	
Annual Inbound/ Outbound/ Intrastate: Tonnage (millions)*	2011	0.7 / 1.1 / < 0.1			
	2040	0.8 / 1.6 / < 0.1			
Annual Inbound/ Outbound/ Intrastate: Value ($ billions)*	2011	$0.4 / $0.4 / < $0.1			
	2040	$0.4 / $0.9 / < $0.1			
% Freight Flows by Mode	2011			100%	
	2040			100%	
Average % Truck Mix / Average Total Daily Volume	2011				
Major Bottlenecks as identified	ATRI (1)				
	FAC / Freight User Survey (2)	None identified	None identified	None identified	
Top Commodities	Tonnage	Lumber Furniture, Coal Minerals, Crude petrol Gas, Concrete Glass Primary Metal, Chemicals Petroleum, and Waste Hazardous Matter			
	Value	Concrete Glass Primary Metal, Chemicals Petroleum, Fabricated Metal Machinery Equipment, Lumber Furniture, and Waste Hazardous Matter			
Major Freight Generators	Tonnage (3)	Bluebox, Axiall Corp, Mississippi Gravel Sales Inc.			
Top 10 Statewide Freight Counties Served		Lowndes, Monroe			

Corridor Infrastructure Performance

		Highway	Rail	Ports & Waterways	Airports
Capacity: Highways: Level of Service (4) Rail: % supporting 286k weight limits Ports: channel depth Commercial airports: storage volume to capacity (5)	2011			Recovery time from flood or drought to 12' minimum depth	
	2040				
Safety: Highways: Annual Crash Rate (174/100M vmt) (6) Rail: RR crossings w/o active warning devices (7)					
Infrastructure Condition: Highways: Pavement & Structures Rail: Speed/Track (9)	IRI rating (8)				
	Vertical clearance				
	Weight-restricted bridges				

Corridor Needs Assessment and Infrastructure Need

	Highway	Rail	Ports & Waterways	Airports
Performance Assessment	Highways such as I-22/US 78, US 45, US 72, and US 82 and local connectors provide critical last mile access to the Tennessee-Tombigbee Waterway ports.	Last mile rail access is an issue for multiple TN-Tombigbee ports served by short lines. Port of Aberdeen currently has no direct rail access, and all other TN-Tombigbee ports are in need of rail access, maintenance, modernization, and capacity improvements. Only some rail spurs to the river ports can handle 286k weight limits.	The national and statewide significance of the Tn-Tombigbee ports is signified by the fact that all but one of them are served by the NHS Intermodal Connectors. (Port of Aberdeen and Clay County Port currently process very minimum cargo volumes.). Inland port alternatives along the TN-Tombigbee help keep rates for other modes competitive. Beyond Mississippi, inland ports provide feeder service for international and domestic shipments downstream through Mobile, Alabama. Last mile rail and roadway access is critical for the six river ports located within the corridor. Class I railroads (KCS and BNSF) directly serve several of the Tenn–Tom Waterway System ports in the corridor, with short lines providing connecting services. The quality of last mile access rail service provided by other short line carriers depends on these Class I connections. (Port of Aberdeen has no existing direct rail connection.)	
Potential Freight Improvement Projects	Consider and prioritize improvements to the NHS connectors in highway project programming due to their role in providing roadway access to the Tennessee-Tombigbee Waterway ports. US 278 - US 45 to Amory: widen to 4 lanes (to Port of Amory).	Port of Itawamba (MMSW): Rehabilitate 23 miles of rail line from Fulton to Amory to handle 286k carload weights (MS State Rail Plan). Port of Amory (near the facility) - BNSF: upgrade 12 rail bridges between Amory and Columbus to permit 286K loads (MULTIPLAN 2035 and MS State Rail Plan). Port of Amory - BNSF: extend rail spur to US 278 bridge (MULTIPLAN 2035 and MS State Rail Plan). Port of Aberdeen: construction of a 3.2-mile-long connection track to the Kansas City Southern Railway (MULTIPLAN 2035 and MS State Rail Plan). Rehabilitate the 10-mile Yellow Creek Railroad that connects Yellow Creek State Inland Port to the KCS system (MS State Rail Plan & Multiplan 2035).	Encourage continued use of the Port of Itawamba, Port of Amory, Lowndes County Port, and Yellow Creek Port through promoting highway and rail access to port facilities along the I-22/US 78, US 45, US 72, and US 82 through the Intermodal Connector Improvement Program.	

Notes:

(1) FHWA/ATRI Nationwide Bottleneck Analysis

(2) MS Freight Advisory Committee input and Freight User Survey Bottleneck Identification

(3) Major freight generators move over 1 million tons or $200 million in value

(4) Undesired Level of Service defined as below LOS C in rural areas and below LOS D for urban areas.

(5) Capacity includes the total storage space for air cargo, ramp space and capacity in tonnage. Volume refers to cargo volumes in tonnage.

**** Excludes through freight***

(6) Crash rate greater than 80% of state average for Tier I and 100% for Tier II

(7) Criteria applies to all public road crossings with active crossing warning devices (gates and warning signals for Tier I and Tier II crossings).

(8) Pavement condition is satisfactory if IRI rating on 65% of primary route miles < 95 for Tier I and 60% < 95 for Tier II.

(9) Tier I: all core track meets or exceeds FRA Class 4 standards (> 40 mph for freight, > 60 mph for passenger).
Tier II: 80% of core track meets or exceeds FRA Class 3 standards (> 25 mph for freight, > 30 mph for passenger; no signals).

Appendix D: Mississippi Freight Network Corridor Performance Measures Methodology

Performance Measure		Tier I Corridor Facilities	Tier II Corridor Facilities	Data Sources	Methodology Notes
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	MDOT Road Characteristics file (**MDOT RWC_2011.shp**)	Use MDOT planning targets of LOS C for rural highways and LOS D for urban highways. Apply appropriate factor to the urban (non-interstate) road capacities based on the assumed signals/mile. Calculate level of service for each Road Characteristics segment and compile list of segments that exceed the level of service target.
	2040	Urban: LOS D or better Rural: LOS C or better	Urban: LOS D or better Rural: LOS C or better	MDOT traffic counts, capacity and growth rates (**2011 Growth Rate for all State Maintained, CoSqs.xlsx; Service volume capacity reference-Unacceptable Thresholds (Final 1-30-2012 .xlsx**)	
Safety Ratings		Primary route annual crash rate < 139/100M vmt (80% * statewide average of 174)	Primary route annual crash rate < 174 /100M vmt (statewide average)	MDOT Road Characteristics File (**MDOT RWC_2011.shp**)	Calculate the crash rate for all crashes for each Road Characteristics segment using the crash, volume and distance attributes and compare to the calculated statewide average. The statewide average rate of 174/100M vmt was used as the benchmark and was determined from the most recent three years crash experience available from MDOT.
				MDOT Crash Data, 2009-2011 (**MDOT All Crashes '09 - '11.xlsx GIS Point Database**)	
Pavement Condition		>75% of primary route miles < 95 IRI rating	>65% of primary route miles < 95 IRI rating	MDOT Road Characteristics File (**MDOT RWC_2011.shp**)	The IRI 95 criteria is the AASHTO recommendation for an acceptable rating; Stratify segments by 95 IRI rating and evaluate based on performance measure criteria.
Structures Condition		All main line bridges >16' vertical clearance	All main line bridges >15' vertical clearance	National Bridge Inventory (**NBI.shp, FHWA GIS Point Database)**	Query database of bridge vertical clearances and evaluate based on performance measure criteria.
		# of weight-restricted bridges = 0%	# weight-restricted bridges < 10%	MDOT bridge database (**MDOT_POSTED_BRIDGES_P.shp**)	Query database of bridge weight restrictions and evaluate based on performance measure criteria.

Performance Measure	Tier I Corridor Facilities	Tier II Corridor Facilities	Data Sources	Methodology Notes
Railroads				
Weight capacity	100% able to carry > 286k lb carloads	100% able to carry > 286k lb. carloads	Mississippi Goods Movement and Trade Study (MGM&TS), 2013, Technical Memorandum G-2 - Performance Measures. Exhibit 29; and Rail Operator system maps	A visual evaluation was conducted using MGM&TS mapping. For future updates and ongoing performance monitoring, data source will be updated State Rail Plan.
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)	USDOT crossing inventory (**MRCMIS.shp**)	Query "maximum speed" attribute in the database and evaluate based on performance measure criteria. Data must be used with caution, as there appear to be data entry and coordinate errors.
Safety	All **public road** crossings of functional classification Collector or greater equipped with active crossing protection (gates and warning signals)	All **public road** crossings of functional classification Collector or greater equipped with active crossing protection (gates and warning signals)	USDOT crossing inventory (**MRCMIS.shp)** and (http://fragis.fra.dot.gov/Apps/GISFRASafety/	Query the "**gates**", "**flashov**", "**flashnov**", "**flashmas**", and "**flashoth**" attributes in the database and evaluate based on performance measure criteria. Only public road crossings were included.

MISSISSIPPI STATEWIDE FREIGHT PLAN

ADDENDUM

OCTOBER 2017

MDOT
MISSISSIPPI DEPARTMENT OF TRANSPORTATION

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1. Introduction

In an effort to provide a cohesive strategy for supporting efficient freight movement, the Mississippi Department of Transportation (MDOT) prepared an initial Mississippi State Freight Plan (MSFP or Freight Plan), completed in February 2015, to develop a coherent strategy for addressing the freight transportation needs of Mississippi's economy and its industries. This addendum serves to update the MSFP and address additional requirements found in the new federal transportation bill, Fixing America's Surface Transportation Act (FAST Act).

1.1 Purpose of the Freight Plan Addendum

The MSFP was completed in February 2015 and satisfied the requirements in the federal transportation bill, Moving Ahead for Progress in the 21st Century Act (MAP-21), which was enacted in 2012. Shortly before the MSFP was completed a new federal transportation bill, the FAST Act, was signed into law. The FAST Act requires states to complete a statewide freight plan and outlined some new elements that must be included in those plans in order to be eligible to receive federal funds for freight projects. This addendum serves as an update to the original MSFP and addresses all the new elements included in the FAST Act.

1.2 Organization of the Freight Plan Addendum

To provide an update of the MSFP and comply with federal expectations for state freight plans, the Freight Plan Addendum is organized as follows:

Chapter 1: Introduction – identifies where the MSFP addresses the FAST Act requirements for statewide freight plans.

Chapter 2: Goals – reviews the Mississippi Statewide Freight Plan goals to ensure compliance with the FAST Act and new MULTIPLAN 2040 goals.

Chapter 3: Critical Urban and Rural Freight Corridors – presents the methodology behind identifying the federally required critical urban and rural freight corridors and shows the results of the identification process.

Chapter 4: Freight-Caused Congestion – provides an identification of significant congestion or delay caused by freight movements and potential strategies to mitigate that congestion or delay.

Chapter 5: Fiscally Constrained Investment Plan – presents a list of priority projects and describes how funds made available would be invested and matched.

1.3 State Freight Plan Requirements

The FAST Act requires each state to develop a state freight plan in order to receive funding under the National Highway Freight Program. The recommended FAST Act state freight plan elements are listed in **Table 1**. **Table 1** also identifies the locations within the report where the corresponding information may be found.

Table 1: FAST Act Freight Plan Requirements	
Plan Requirements	**Mississippi Freight Plan**
Identify significant freight system trends, needs, and issues with respect to the state	Trends: Chapter 2.3.2 Needs: Chapter 4.3 Issues: Chapter 2.4
Describe freight policies, strategies, and performance measures that will guide freight-related transportation investment decisions	Policies: Chapter 6.4.4 Strategies: Chapter 6.3 Performance Measures: Chapter 4.1 and Chapter 6.4.6
A list of multimodal critical rural freight facilities; Critical rural and urban freight corridors designated within the State	Addendum Chapter 3, Addendum Appendices A and B
Describe how the plan will improve the ability of the state to meet national freight goals	Addendum Chapter 2
Show evidence of consideration of innovative technologies and operational strategies, including intelligent transportation systems, that improve safety and efficiency of freight movement	Overview: Chapter 5 Strategies: Chapter 6.4.3
Consideration of improvements that may be required on routes on which travel by heavy vehicles (including mining, agricultural, energy cargo or equipment, and timber vehicles) is projected to substantially deteriorate roadways condition	Chapter 2.4.3 (MDOT finds no indication of extraordinary deterioration of highway network due to mineral or resource extraction or harvest activity)
An inventory of facilities with freight mobility issues, such as truck bottlenecks, within the state, and a description of the strategies the State is employing to address those freight mobility issues	Systems Level: Chapter 2.4.1 MFN System: Chapter 4.2
Consideration of any significant congestion or delay caused by freight movements and any strategies to mitigate that congestion or delay	Addendum Chapter 4
A freight investment plan that, includes a list of priority projects and describes how funds made available would be invested and matched	Addendum Chapter 5, Addendum Appendix C

Source: FHWA *Guidance on State Freight Plans and Freight Advisory Committees* (Guidance, 81 FR 71185, 14 October 2016)

The only items that were not included in the 2015 version of the MSFP include the identification of critical urban and rural freight corridors, the consideration of freight caused congestion and the fiscally constrained investment plan. This addendum focuses on these items. In addition to the items in **Table 1**, states are required to update their freight plans a minimum of every five years.

2. Goals

2.1 National Strategic Freight Goals

Subsequent to MAP-21, the FAST Act established a national multimodal freight policy that includes national goals to guide decision-making and maintain and improve the condition and performance of the National Multimodal Freight Network. The goals of the national multimodal freight policy are to:

1. Identify infrastructure improvements, policies, and operational innovations that: – Strengthen the contribution of the National Multimodal Freight Network to the economic competitiveness of the United States; – Reduce congestion and eliminate bottlenecks on the National Multimodal Freight Network; and – Increase productivity, particularly for domestic industries and businesses that create high-value jobs;
2. Improve the safety, security, efficiency, and resiliency of multimodal freight transportation;
3. Achieve and maintain a state of good repair on the National Multimodal Freight Network;
4. Use innovation and advanced technology to improve the safety, efficiency, and reliability of the National Multimodal Freight Network;
5. Improve the economic efficiency and productivity of the National Multimodal Freight Network;
6. Improve the reliability of freight transportation
7. Improve the short- and long-distance movement of goods that: – Travel across rural areas between population centers; – Travel between rural areas and population centers; and – Travel from the nation's ports, airports, and gateways to the National Multimodal Freight Network;
8. Improve the flexibility of states to support multi-state corridor planning and the creation of multi-state organizations to address freight connectivity;
9. Reduce the adverse environmental impacts of freight movement on the National Multimodal Freight Network; and
10. Pursue the goals described in this subsection in a manner that is not burdensome to state and local governments.

2.2 Mississippi Transportation Goals

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 Mississippi's recently updated statewide multimodal transportation plan, MULTIPLAN 2040, as well as national freight goals defined in the National Freight Policy. The statewide transportation plan was updated after the completion of the 2015 MSFP from MULTIPLAN 2035 to MULTIPLAN 2040. Mississippi's MULTIPLAN 2040 sets 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 goals were established to guide MDOT's transportation program delivery efforts. Because it is understood by USDOT that a State's adopted long range plan will serve as the umbrella under which a State's freight plan is developed, any freight-specific goals should reflect these broader goals. As defined in MULTIPLAN 2040, Mississippi's transportation goals are as follows:

Environmental Stewardship: The expansions and modernization of the transportation network should be mindful of its effect on the environment and attempt to mitigate the impacts
Maintenance and Preservation: Preserve and maintain existing transportation infrastructure
Awareness, Education, and Cooperative Processes: Establish effective transportation partnerships and collaborations while increasing awareness of the benefits and needs of an intermodal system
Funding and Finance: Provide reliable funding and financing options for the transportation system and allocate funds efficiently
Safety: Ensure a safe transportation network for all users
Accessibility and Mobility: Improve connectivity and travel of residents, commerce, and industry
Economic Development: Invest in strategic transportation improvements to support the state's economy and competitiveness

2.3 Comparison of National Freight Goals with Mississippi Transportation Goals

Table 2 shows the correlation between the National Freight Policy Goals and the general long-range transportation goals for Mississippi identified in MULTIPLAN. Each FAST Act national freight policy goal is broadly reflected in one or more of stated state goals. The MSFP Freight Goals remain unchanged from the 2015 plan and are consistent with both the updated national freight goals and the MULTIPLAN 2040 goals:

1. Protect and enhance the environment while enhancing the freight network performance
2. Maintain the Mississippi freight network infrastructure in a state of good repair
3. Protect the safety and security of freight infrastructure
4. Improve reliability and reduce congestion on the priority freight corridors
5. Improve economic benefits of the statewide freight network

Table 3 shows the overlap between the MSFP freight goals and the MULTIPLAN 2040 goals.

Table 2: Comparison of National Freight Policy Goals and Mississippi Transportation Goals								
		Mississippi Transportation Goals						
Freight Focus Area	National Freight Policy Goal	Environmental Stewardship: The expansions and modernization of the transportation network should be mindful of its effect on the environment and attempt to mitigate the impacts	Maintenance and Preservation: Preserve and maintain existing transportation infrastructure	Awareness, Education, and Cooperative Processes: Establish effective transportation partnerships and collaborations while increasing awareness of the benefits and needs of an intermodal system	Funding and Finance: Provide reliable funding and financing options for the transportation system and allocate funds efficiently	Safety: Ensure a safe transportation network for all users	Accessibility & Mobility: Improve connectivity and travel of residents, commerce, and industry	Economic Development: Invest in strategic transportation improvements to support the States economy and competitiveness
Economic competitiveness/Mobility	Identify infrastructure improvements, policies, and operational innovations that: – Strengthen the contribution of the National Multimodal Freight Network to the economic competitiveness of the United States; – Reduce congestion and eliminate bottlenecks on the National Multimodal Freight Network; and – Increase productivity, particularly for domestic industries and businesses that create high-value jobs						X	X
Safety	Improve the safety, security, efficiency, and resiliency of multimodal freight transportation					X		
Infrastructure condition	Achieve and maintain a state of good repair on the National Multimodal Freight Network		X					
Technology/Safety/reliability	Use innovation and advanced technology to improve the safety, efficiency, and reliability of the National Multimodal Freight Network			X		X	X	
Economy	Improve the economic efficiency and productivity of the National Multimodal Freight Network							X
System reliability	Improve the reliability of freight transportation			X			X	
Connectivity	Improve the short- and long-distance movement of goods that: – Travel across rural areas between population centers; – Travel between rural areas and population centers; and – Travel from the nation's ports, airports, and gateways to the National Multimodal Freight Network						X	
Regional planning	Improve the flexibility of states to support multi-state corridor planning and the creation of multi-state organizations to address freight connectivity			X				
Environment	Reduce the adverse environmental impacts of freight movement on the National Multimodal Freight Network	X						
Funding	Pursue the goals described in this subsection in a manner that is not burdensome to state and local governments				X			

Table 3: Comparison of MULTIPLAN 2040 Goals with MSFP Freight Goals	
MULTIPLAN 2040 Goals	MSFP Freight Goals
Environmental Stewardship: The expansions and modernization of the transportation network should be mindful of its effect on the environment and attempt to mitigate the impacts	Protect and enhance the environment while enhancing the freight network performance.
Maintenance and Preservation: Preserve and maintain existing transportation infrastructure	Maintain the MS freight network infrastructure in a state of good repair.
Awareness, Education, and Cooperative Processes: Establish effective transportation partnerships and collaborations while increasing awareness of the benefits and needs of an intermodal system	
Funding and Finance: Provide reliable funding and financing options for the transportation system and allocate funds efficiently	
Safety: Ensure a safe transportation network for all users	Protect the safety and security of freight infrastructure
Accessibility & Mobility: Improve connectivity and travel of residents, commerce, and industry	Improve reliability and reduce congestion on the priority freight corridors.
Economic Development: Invest in strategic transportation improvements to support the state's economy and competitiveness	Improve economic benefits of the statewide freight network.

3. Critical Urban and Rural Freight Corridors

The FAST Act highlights the importance of freight movements and requires the Federal Highway Administration (FHWA) Administrator to designate a National Highway Freight Network (NHFN). This network will guide limited federal resources towards improving performance on the NHFN. The NHFN is composed of the following components:

- **Primary Highway Freight System (PHFS)** – The PHFS was designated by the FHWA, and identifies the most critical highway portions of the U.S. freight transportation system through measurable and objective national data. The network consists of a total of 41,518 centerline miles, 37,436 of which are on Interstates and 4,082 are on non-Interstate roads.
- **Other Interstate portions not on the PHFS** – This consists of all Interstate roads not included in the PHFS.

Furthermore, as part of the FAST Act, USDOT allocated additional miles to each state, based on its PHFS mileage, to designate to the NHFN. These miles are eligible for expanded use of National Highway Freight Program formula funds and Infrastructure for Rebuilding America (INFRA) grants and are referred to as:

- **Critical Urban Freight Corridors (CUFCs)** – These are public roads in urbanized areas which provide access and connection to the PHFS and the Interstate with other ports, public transportation facilities, or other intermodal transportation facilities.
- **Critical Rural Freight Corridors (CRFCs)** – These are public roads not in an urbanized area which provide access and connection to the PHFS and the Interstate with other important ports, public transportation facilities, or other intermodal freight facilities.

Mississippi may designate a maximum of 150 miles as CRFCs and a maximum of 75 miles as CUFCs. The designation process and resulting corridors are discussed in this chapter.

3.1 Critical Urban Freight Corridors

Critical Urban Freight Corridors (CUFCs) are public roads in urbanized areas which provide access and connection to the PHFS and the Interstate with other ports, public transportation facilities, or other intermodal transportation facilities. In order to be designated a CUFC the corridor must be in an urbanized area, and meet one or more of the following four elements:

(A) connects an intermodal facility to:
    1. the PHFS;
    2. the Interstate System; or
    3. an intermodal freight facility;

(B) is located within a corridor of a route on the PHFS and provides an alternative highway option important to goods movement;

(C) serves a major freight generator, logistic center, or manufacturing and warehouse industrial land; or

(D) is important to the movement of freight within the region, as determined by the MPO or the State.

The legislation specifies that in an urbanized area with a population of 500,000 or more individuals, the MPO, in consultation with the State, may designate a CUFC. In an urbanized area with a population of less than 500,000 individuals, the State, in consultation with the MPO, may designate a CUFC.

The corridors were chosen by MDOT in conjunction with the Mississippi Freight Advisory Committee and the MPOs. A Freight Advisory Committee meeting was held on April 19, 2017 at MDOT and the committee was briefed on the new FAST Act freight requirements, the critical urban and rural freight corridors were discussed, and members had an opportunity to provide input. MDOT coordinated with the Memphis MPO on their designation of CUFCs as they have a population over 500,000. The critical urban freight corridors that MDOT has chosen to designate total 75 miles, the maximum amount allowable under the FAST Act. The miles are divided among four MPOS as follows:

- Central Mississippi Planning and Development District: 34 miles
- Gulf Regional Planning Commission: 22 miles
- Memphis: 12 miles (MPO with population greater than 500,000)
- Hattiesburg-Petal-Forrest-Lamar: 7 miles

For a map of the critical urban freight corridors and tables with the specific routes and mileage, please refer to **Appendix A**.

3.2 Critical Rural Freight Corridors

A public road may be designated as a critical rural freight corridor if the road is not in an urbanized area, as defined by the U.S. census bureau, and meets one or more of the following seven elements:

(A) is a rural principal arterial roadway and has a minimum of 25 percent of the annual average daily traffic of the road measured in passenger vehicle equivalent units from trucks (Federal Highway Administration vehicle class 8 to 13);
(B) provides access to energy exploration, development, installation, or production areas;
(C) connects the PHFS or the Interstate System to facilities that handle more than:
    1. 50,000 20-foot equivalent units per year; or
    2. 500,000 tons per year of bulk commodities;
(D) provides access to:
    1. a grain elevator;
    2. an agricultural facility;
    3. a mining facility;
    4. a forestry facility; or
    5. an intermodal facility;
(E) connects to an international port of entry;
(F) provides access to significant air, rail, water, or other freight facilities in the State; or

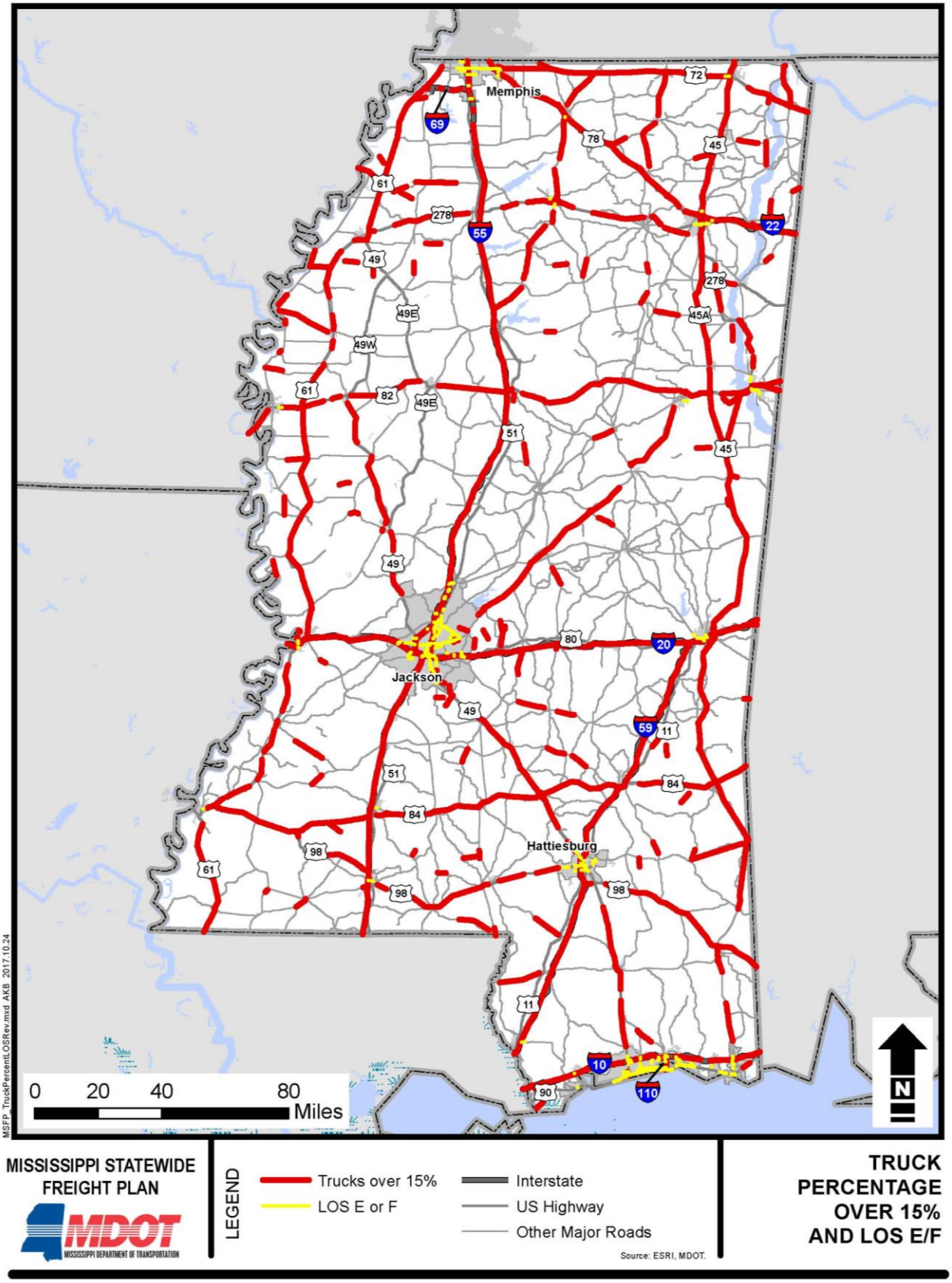
(G) is determined by the State to be vital to improving the efficient movement of freight of importance to the economy of the State.

The critical rural freight corridors that MDOT has chosen to designate total 119.42 miles out of the maximum 150 miles allowable under the FAST Act. These corridors represent critical intermodal connectors outside of the urban boundaries and play an important role in the movement of freight. For a map of the critical rural freight corridors as well as a detailed table please refer to **Appendix B**.

4. Freight-Caused Congestion

The FAST Act requires that states consider any significant congestion or delay caused by freight movements and provide strategies to mitigate that congestion or delay. Freight-caused congestion within Mississippi was analyzed by comparing areas with a deficient Level of Service (LOS) to routes with high truck percentages. LOS is a qualitative measure of traffic operating conditions on a roadway. LOS ratings range from A to F, where A is the best, E represents operations with traffic volumes near capacity of the roadway and F represents congested operations where traffic exceeds roadway capacity. **Figure 1** shows routes that have a LOS of E or F and routes that have 15 percent or more truck traffic. Most of the routes with LOS E or F lie in the more densely populated urban areas. The routes with the highest truck percentages in Mississippi are mainly on interstates and there is minimal overlap between these routes and routes with LOS E or F. This suggests that freight is generally not the cause, but rather the object, of congestion in Mississippi and that congestion is most likely due to other factors such as passenger vehicles and dense populations. Due to the general lack of overlap between deficient LOS and high truck percentages, no specific strategies were developed to mitigate congestion caused by truck traffic.

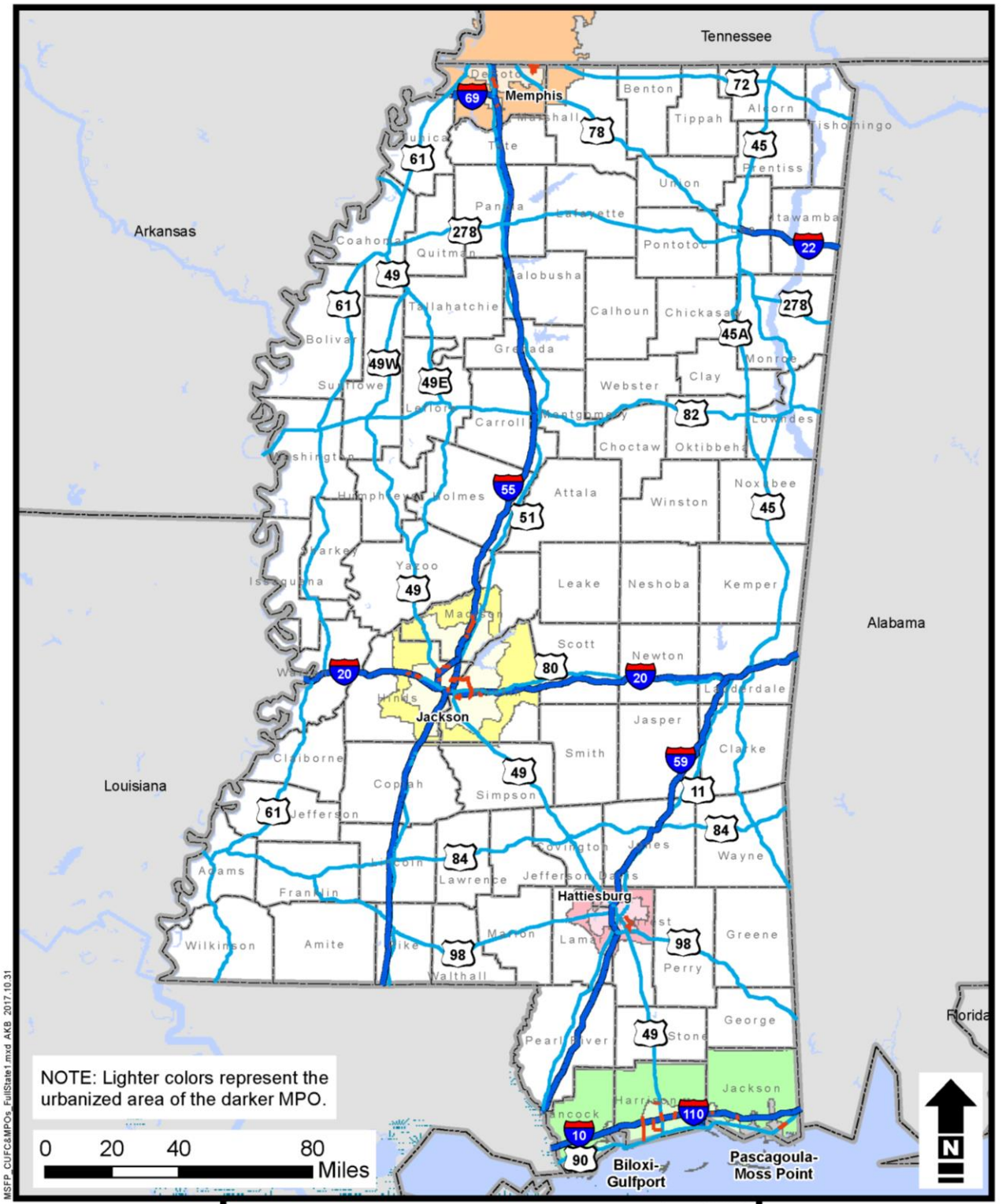
Figure 1: Routes with LOS E or F Overlaid with Routes with 15 Percent Trucks or More



5. Fiscally Constrained Investment Plan

The FAST Act requires that states include a fiscally constrained freight investment plan that includes a list of priority projects and describes how the NHFP funds will be invested and matched. **Appendix C** contains an unconstrained list of projects eligible to use the NHFP funds. These projects are derived from the STIP that are on the National Highway Freight Network. **Appendix C** also contains projects in the fiscally constrained investment plan and costs/funding anticipated for each project for the remaining NHFP funding period. The identified projects are a subset of the unconstrained list and prioritized based on the anticipated project schedule as it correlates to the Federal Fiscal Year of the NHFP. These lists of projects are subject to change as amendments are made to the STIP and Mississippi portion of the NHFN.

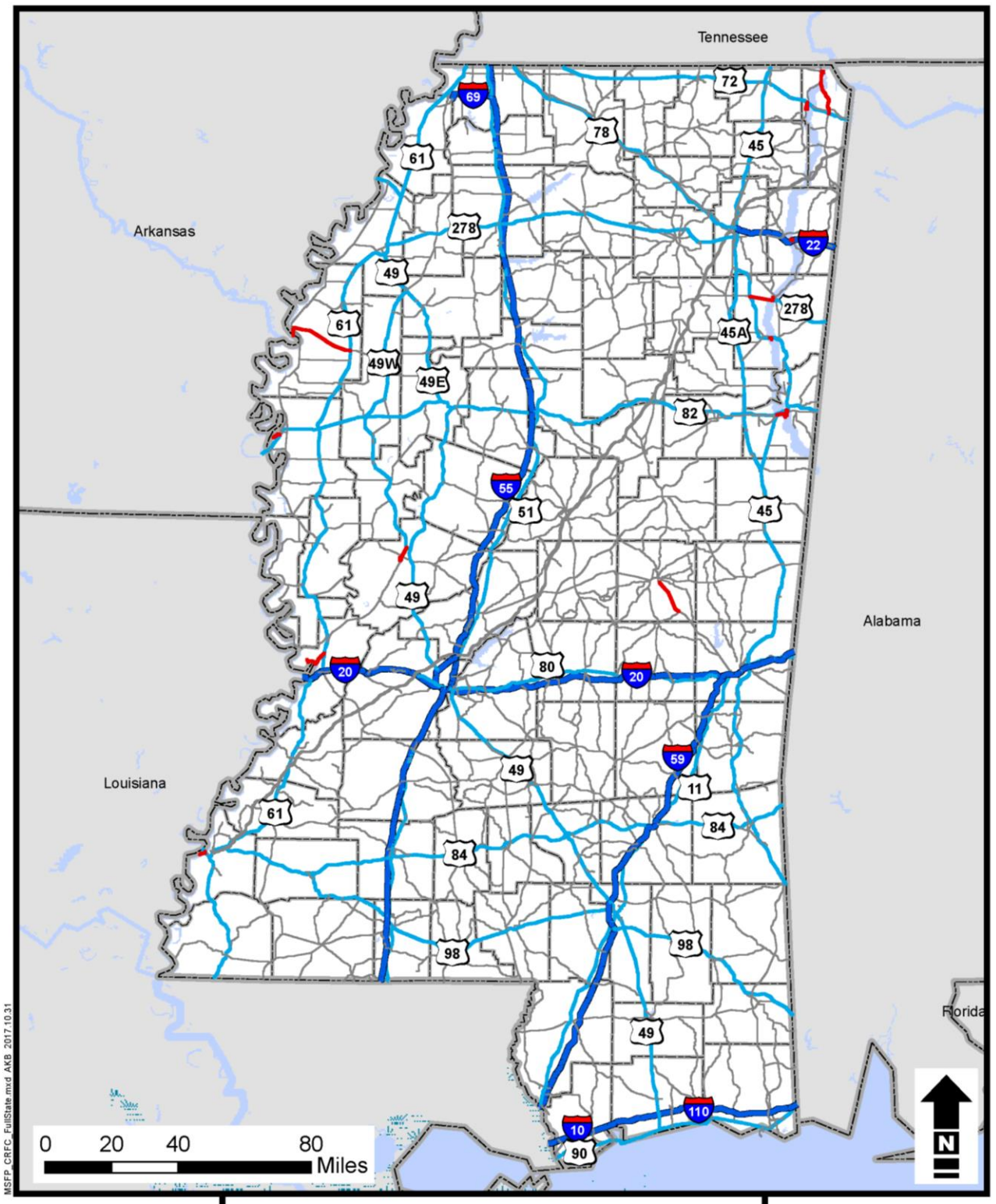
Appendix A: Critical Urban Freight Corridors


Tennessee
Arkansas
Louisiana
Alabama
Florida
Memphis
Jackson
Hattiesburg
Biloxi-Gulfport
Pascagoula-Moss Point
NOTE: Lighter colors represent the urbanized area of the darker MPO.
0 20 40 80
Miles
N
MSFP_CUFC&MPOs_FullState1.mxd AKB 2017.10.31
MISSISSIPPI STATEWIDE FREIGHT PLAN
MDOT
MISSISSIPPI DEPARTMENT OF TRANSPORTATION
LEGEND
Critical Urban Freight Corridor
Central Mississippi Planning & Development District
Gulf Regional Planning Commission
Hattiesburg-Petal-Forrest-Lamar MPO
Memphis Urban Area MPO
Interstate
US Highway
Source: ESRI, MDOT.
CRITICAL URBAN FREIGHT CORRIDORS AND MPOs

MS Critical Urban Freight Corridors						
MPO	**County**	**Route**	**Start Point**	**End Point**	**Length (miles)**	**CUFC Criteria ID**
CMPDD	Hinds	I-20 Frontage Rd US 80	Industrial Park Dr I-20 Frontage Rd	US 80 I-20	1.97	J - Serves a major freight generator - Clinton Industrial Park
	Hinds	Gallatin St	US 80	I-20	0.59	K - MPO determined important - provides access to truck stop facilities and manufacturing wholesale facilities
	Hinds	Beasley Rd Watkins Dr	Industrial Park Rd I-220	Watkins Dr Beasley Rd	2.38	J - Serves a major freight generator - Northwest Industrial Park
	Hinds	Woodrow Wilson Dr	N Mill St	I-55	1.67	J - Serves a major freight generator - Mayes-Lawson Commerce Park Industrial Area & CN / Illinois Central / Jackson Rail Yard
	Hinds	N State St Old Canton Rd Lakeland Dr	Old Canton Rd Lakeland Dr Old Canton Rd	Woodrow Wilson Dr N State St I-55	1.33	K - MPO determined important - provides urban freight delivery access to medical and commercial facilities
	Hinds	I-20 Frontage Rd St Thomas Pkwy	Continental Plant I-20 Frontage Rd	St Thomas Pkwy I-20	0.86	J - Serves a major freight generator - Continental Tire Plant
	Hinds	US 49	Gary Dr	I-220	1.52	K - MPO determined important - significant truck route
	Madison	MS 857 W Sowell Rd	Nissan Parkway I-55	W Sowell Rd MS 857	4.21	J - Serves a major freight generator - Nissan Canton Vehicle Assembly Plant
	Madison	Commercial Parkway Curbview Cove MS 22	Waterford Parkway MS 22 Curbview Cove	Curbview Cove Commercial Parkway I-55	1.09	J - Serves a major freight generator - Canton Commercial & Industrial Center
	Madison	Gluckstadt Rd E	I-55	Industrial Dr	0.37	J - Serves a major freight generator - Central MS Industrial Center
	Madison	Gluckstadt Rd w	Distribution Dr	I-55	0.43	J - Serves a major freight generator - Gluckstadt Distribution Center
	Rankin	MS 475 Allen Stuart Dr Forensic Science Dr	I-20 Forensic Science Dr Old Whitfield Rd	Allen Stuart Dr MS 475 Allen Stuart Dr	2.56	J - Serves a major freight generator - FedEx facility
	Rankin	MS 475	North Fox Hall Rd	I-20	3.04	H - Connects Intermodal Facility to PHFS - Jackson International Airport / MS Air Cargo Logistics Center to I-20
	Rankin	MS 468 S Pearson Rd Chidre St	I-20 MS 468 Weems St	S Pearson Rd Chidre St S Pearson Rd	1.82	H - Connects Intermodal Facility to PHFS - KCS / Jackson Intermodal Rail Yard to I-20
	Rankin	Interstate Dr Industrial Park Dr	US 49 Interstate Dr	Industrial Park Dr Weems St	1.60	J - Serves a major freight generator - KCS / Jackson Intermodal Rail Yard
	Rankin	MS 18 Marquette Rd	I-20 MS 18	Marquette Rd E Metro Pkwy	1.74	J - Serves a major freight generator - East Metropolitan Center
	Rankin Hinds	MS 25 MS 475	I-55 MS 25	MS 475 North Fox Hall Rd	6.11	H - Connects Intermodal Facility to Interstate System - Jackson International Airport / MS Air Cargo Logistics Center to I-55

MS Critical Urban Freight Corridors						
MPO	**County**	**Route**	**Start Point**	**End Point**	**Length (miles)**	**CUFC Criteria ID**
GRPC	Harrison	County Farm Rd	Landon Rd	I-10	1.64	J - Serves a major freight generator - Long Beach Industrial Park connector & Freight Carrier & Aggregate Facility
	Harrison	Red Creek Rd Beatline Rd	I-10 Red Creek Rd	Beatline Rd Railroad St	5.60	J - Serves a major freight generator - Long Beach Industrial Park
	Harrison	Beatline Rd (proposed)	Railroad St	US 90	0.58	K - MPO determined important - will complete a corridor that will provide primary freight carrier access to Western Harrison County
	Harrison	Canal Rd	I-10	28th St	2.84	H - Connects Intermodal Facility to Interstate System - Port of Gulfport to I-10
	Harrison	28th St	Canal Rd	30th Ave	2.31	H - Connects Intermodal Facility to Interstate System - Port of Gulfport to I-10
	Harrison	US 49	Orange Grove Rd	Airport Rd	2.35	J - Serves a major freight generator - Port of Gulfport
	Harrison	MS 605 N	Lorraine Rd	I-10	0.83	J - Serves a major freight generator - Bernard Bayou Industrial District
	Harrison	MS 605 S	I-10	Seaway Rd	0.73	J - Serves a major freight generator - Bernard Bayou Industrial District
	Jackson	US 90	MS 611	Moss Point East Urban Limits	2.50	J - Serves a major freight generator - Port of Pascagoula
	Jackson	Ingalls Ave Market St	Desoto St Ingalls Ave	Market St MS 613	1.91	J - Serves a major freight generator - Port of Pascagoula
HPFL	Forrest	JM Tatum Industrial Dr	US 49	Old Hwy 49/James St	2.57	J - Serves a major freight generator - Hattiesburg-Forrest Industrial Park
	Forrest	WL Runnels Industrial Dr	JM Tatum Industrial Dr	US 98	1.63	J - Serves a major freight generator - Hattiesburg-Forrest Industrial Park
	Forrest	Old Hwy 49/James St	Faulkner St	JM Tatum Industrial Dr	3.39	J - Serves a major freight generator - KCS Rail Yard & Industrial Area
Memphis	Desoto	Church Rd W	US 51	Airways Blvd	1.42	J - Serves a major freight generator - Desoto Trade Center
	Desoto	Pepper Chase Dr (new construction)	Turman Dr	Star Landing Rd	1.80	J - Serves a major freight generator - Desoto Trade Center
	Desoto	Star Landing Rd W	US 51	Airways Rd	0.39	J - Serves a major freight generator - Desoto Trade Center
	Desoto	Star Landing Rd E	Airways Rd	Swinnea Rd	1.03	K - MPO determined important
	Desoto	Hacks Cross Rd	Stateline Rd	MS 302/Goodman Rd	2.26	J - Serves a major freight generator - Metro Industrial Park
	Desoto	Stateline Rd	Alexander Rd	Forest Hill Irene Rd	3.08	J - Serves a major freight generator - Metro Industrial Park
	Desoto	Polk Ln	Stateline Rd	MS 302/Goodman Rd	2.25	J - Serves a major freight generator - Metro Industrial Park
	Desoto	McCracken Rd	W Commerce St	Vaiden Dr	0.63	J - Serves a major freight generator - Hernando Industrial Park

Appendix B: Critical Rural Freight Corridors



MISSISSIPPI STATEWIDE FREIGHT PLAN

MDOT
MISSISSIPPI DEPARTMENT OF TRANSPORTATION

LEGEND

- Critical Rural Freight Corridors (CRFC)
- Interstate
- US Highway
- Freeway
- MS Route

Source: ESRI, MDOT.

CRITICAL RURAL FREIGHT CORRIDORS

MS CRFC Designations					
County	**Route**	**Start Point**	**End Point**	**Length (miles)**	**CRFC Criteria ID**
Adams	L.E. Barry Rd Government Fleet Rd	River Terminal Rd L.E. Barry Rd	Government Fleet Rd US 425	2.50	D - Provides access to intermodal facility - Port of Natchez
Bolivar	Russell Crutcher Rd MS 8	Port of Rosedale Russell Crutcher Rd	MS 8 US 61	25.60	D - Provides access to intermodal facility - Port of Rosedale
Hancock	US 90 Lower Bay Rd Port and Harbor Dr	MS 607 US 90 Lower Bay Rd	Lower Bay Rd Port and Harbor Dr Port Bienville	11.10	D - Provides access to intermodal facility - Port Bienville
Itawamba	Access Rd Adams St	Port of Itawamba Access Rd	Adams Rd I-22/US 78	1.10	C - Connects Interstate System to high TEUs/tonnage facility - I-22 to Port of Itawamba
Lowndes	MS 182 Port Access Rd	US 82 MS 182	Port Access Rd Port of Columbus	3.30	D - Provides access to intermodal facility - Port of Columbus East Connector
Lowndes	MS 182 Old Macon Rd	US 45 MS 182	Old Macon Rd Charlie Smith Rd	3.80	D - Provides access to intermodal facility - Port of Columbus West Connector
Monroe	US 278 Waterway Dr	US 45 Port Access Rd	Waterway Dr US 278	9.40	D - Provides access to intermodal facility - Port of Amory
Monroe	Norm Connell Dr	US 45	Port of Aberdeen	1.10	D - Provides access to intermodal facility - Port of Aberdeen
Neshoba	MS 19	Philadelphia Urban Limit	MS 492	10.71	D - Provides access to intermodal facility - Weyerhaeuser
Neshoba	MS 16	MS 15	MS 19	3.31	D - Provides access to intermodal facility - Weyerhaeuser
Tishomingo	County Rd 351 County Rd 370 MS 25	County Rd 370 MS 25 County Rd 370	County Rd 370 County Rd 351 US 72	18.50	D - Provides access to intermodal facility - Yellow Creek Port
Tishomingo	MS 365 County Rd 219	US 72 MS 365	County Rd 219 Port Facility	3.80	D - Provides access to intermodal facility - Yellow Creek Port Burnsville Facility
Warren	Industrial Dr Haining Rd N Washington St	Port of Vicksburg Industrial Dr Haining Rd	Haining Rd N Washington St US 61	9.00	D - Provides access to intermodal facility - Port of Vicksburg North Connector
Warren	N Washington St Levee St Depot St Washington St	Haining Rd N Washington St Levee St Depot St	Levee St Depot St Washington St I-20	6.50	C - Connects PHFS to high TEUs/tonnage facility - I-20 to Port of Vicksburg South Connector
Washington	MS 809	Port of Greenville	US 82	2.90	D - Provides access to intermodal facility - Port of Greenville
Yazoo	MS 3 Rialto Rd Levee Rd Old River Rd	US 49W Levee Rd Old River Rd Levee Rd	Rialto Rd MS 3 Rialto Rd MS 3	6.80	D - Provides access to intermodal facility - Port of Yazoo

APPENDIX C: FREIGHT INVESTMENT PLAN

Eligible Highway Freight Projects for National Highway Freight Program				
Project #	Project Detail	Project Location	Scope of Work	Cost
101204	303000	I-10 from SR 609 to SR 57	Widen to 6 Lanes	$47,942,200
102315	302000	I-55 @ I-220 Interchange Bridge # 103.1B	Bridge Widening	$6,000,000
102334	301000	I-59 @ SR 42 Interchange	Interchange Construction	$14,700,000
105858	302000	I-20 Bridge Replacement # 44.9B & Rail Replacements on Bridges # 45.2B&C	Bridge Replacement	$53,593,711
106023	303000	I-55 from Copiah County Line to Byram	Overlay	$17,672,253
106389	301000	I-55 from Rankin County Line to Madison County Line	Mill & Overlay	$22,390,545
106389	302000	I-55 from Hinds County Line to Ridgeland	Mill & Overlay	$3,785,243
106390	301000	I-59 from 5.6 miles North of SR 528 to Clarke County Line	Mill & Overlay	$9,700,000
106669	301000	I-55 from Bogue Chitto Exit to Bogue Chitto River	Mill & Overlay	$13,000,000
106820	301000	I-20 from Scott County Line to 5.1 miles East of SR 15	Mill & Overlay	$17,790,858
106996	301000	I-55 from 1.0 mile South of Martinville to 1.0 mile North of SR 27	Median Barrier [Cable]	$1,500,000
106997	301000	I-55 from Holmes County Line to 1.5 mile North of SR 35/430	Median Barrier [Cable]	$2,000,000
106997	302000	I-55 from 1.0 mile South of SR 14 to Carroll County Line	Median Barrier [Cable]	$2,000,000
107069	301000	I-59 Pearl River County	Mill & Overlay	$1,000,000
107069	302000	I-59 from Hillsdale Interchange to Lamar County Line	Mill & Overlay	$9,550,000
107070	301000	I-55 from SR 8 to Yalobusha County Line	Mill & Overlay	$19,100,000
107083	303000	I-20 MS River Bridge	Bridge Repair	$8,500,000
107214	301000	I-55 Bridge # 266.8 A&B and 267.6 A&B	Bridge Replacement	$25,000,000
107215	301000	I-10 East Pascagoula River Bridge	Bridge Repair	$4,000,000
107298	301000	I-22 from Lee County Line to SR 25	Mill & Overlay	$12,720,000
107299	301000	I-59 from 65th Ave to 1.0 mile North of SR 19	Mill & Overlay	$14,770,971
107300	301000	I-55 from Holmes County Line to SR 35	Shoulder Maintenance	$800,000
107327	301000	I-22 from US 45 to Itawamba County Line	Mill & Overlay	$13,500,000
107328	301000	I-22 from SR 25 South to SR 25 North	Mill & Overlay	$5,220,000
107399	301000	I-20/I-59 @ SR 145 Bridge # 153.0B	Bridge Repair	$1,100,000
107509	201500	I-10 Diamond Head Interchange	Interchange Utilities	$6,400,000
107576	301000	I-69 From 0.5 mile South of Church Rd to 0.1 mile South of SR 302	Mill & Overlay	$5,500,000
107577	301000	I-55 from 2.0 miles North of SR 22 to Yazoo County Line	Mill & Overlay	$12,500,000
107578	301000	I-59 from LA State Line to 0.5 mile North of LA State Line	Pavement Restoration	$1,000,000
107579	301000	I-59 from Lamar County Line to Jones County Line	Pavement Restoration	$42,282,185
107579	302000	I-59 from Forrest County Line to Moselle	Pavement Restoration	$37,820,101
107580	301000	I-22 from SR 178 to US 45	Mill & Overlay	$8,070,000
107823	301000	I-59 From Pearl River County Line to Black Creek	Mill & Overlay	$8,869,466
108091	301000	I-55 From 0.5 mile N of SR 17 to Carroll County Line	Mill & Overlay	$32,500,000
108140	301000	I-55 From 1.8 mile N of SR 35 to Tate County Line	Mill & Overlay	$25,000,000
501561	601000	I-269 / SR 304 Desoto and Marshall Counties	Pave	$87,739,053
501561	602000	SR 601 Canal Road from Port of Gulfport to I-10	Grade, Drain, Bridge, Pave	$295,538,055
501561	603000	I-59 from 16th Ave to 4th Ave in Laurel	Realignment	$53,546,566
501561	604000	Madison County Bond Project	Reconstruction	$238,579,905

This table contains the list of highway freight projects eligible for the National Highway Freight Program and are subject to change as amendments are made to the STIP and the MS portion of the NHFN.
Amended March 2022

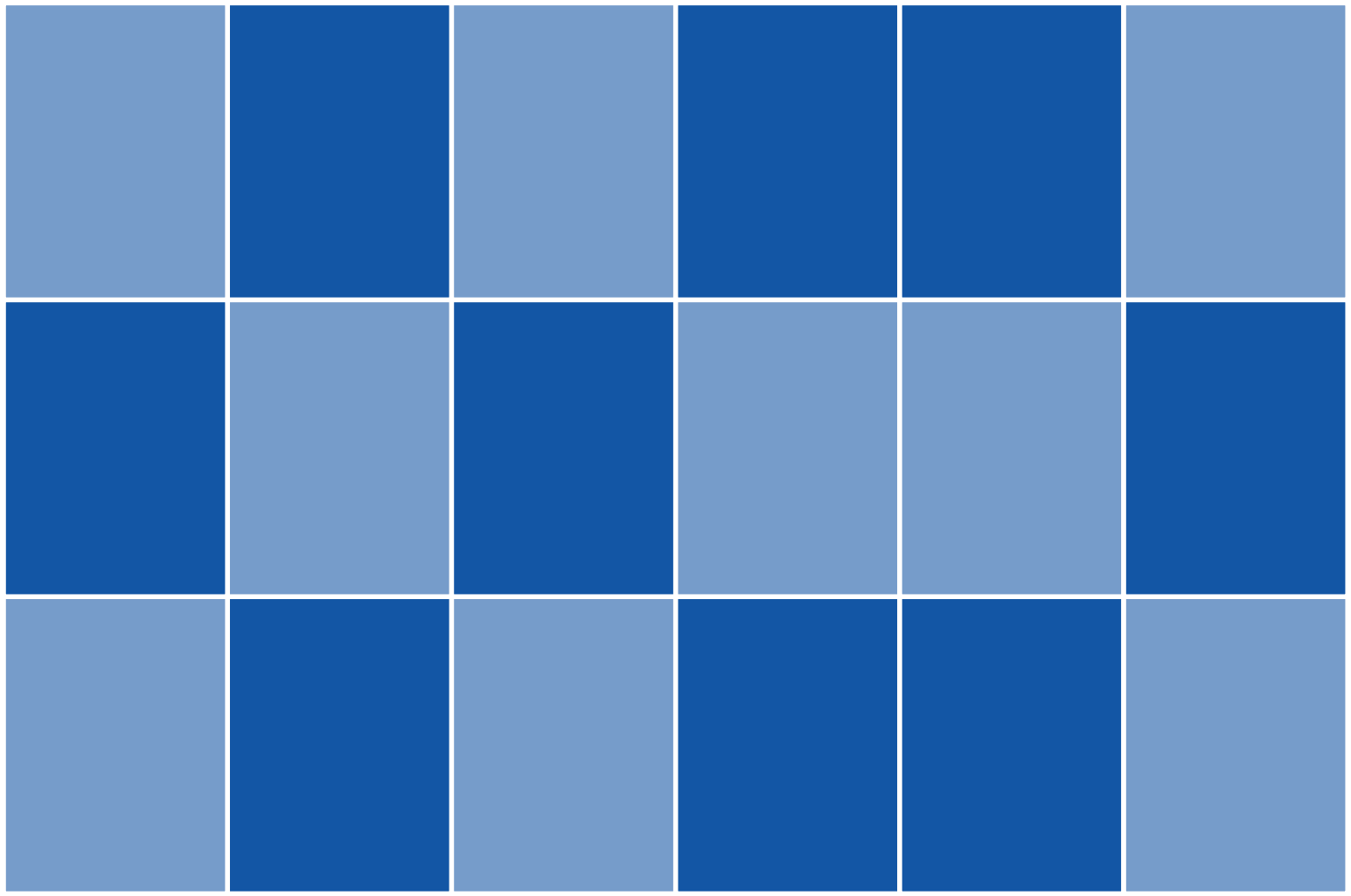
Constrained Highway Freight Investment Projects												
Project #	Project Detail	FMIS #	Project Location	Scope of Work	Federal Fiscal Year (FFY)	NHFP Funds Apportionment	NHFP Funds Obligated/ Anticipated	NHFP Funds Carryover	Other Federal Funds	State Funds	AC	Total Cost
101204	303000	0101(136)	I-10 from SR 609 to SR 57	Widen to 6 Lanes	2016	$13,869,264	$13,869,264		$19,849,111	$8,429,593	$5,794,232	$47,942,200
106389	301000	0552(229)	I-55 from Rankin County Line to Madison County Line	Mill & Overlay	2017	$12,694,684	$8,497,022		$11,532,646	$2,360,877	$0	$22,390,545
106820	301000	0202(089)	I-20 from Scott County Line to 5.1 miles E of SR 15	Mill & Overlay			$1,748,995		$14,262,777	$1,779,086	$0	$17,790,858
501561	602000	1145(010)	SR 601 Canal Road from Port of Gulfport to I-10	Grade, Drain, Bridge, Pave	2018	$14,402,907	$6,529,532		$107,146,969	$28,419,130	$153,442,424	$295,538,055
501561	601000	0029(103)	I-269 / SR 304 Desoto and Marshall Counties	Pave			$2,487,900		$47,685,414	$12,112,864	$25,452,875	$87,739,053
501561	603000	0592(091)	I-59 from 16th Ave to 4th Ave in Laurel	Realignment			$1,226,744		$28,320,289	$3,283,007	$20,716,526	$53,546,566
501561	604000	0552(202)	Madison County Bond Project	Reconstruction			$4,158,731		$112,332,153	$20,471,146	$101,617,875	$238,579,905
106023	303000	0552(233)	I-55 from Copiah County Line to Byram	Overlay	2019	$16,257,339	$10,407,341		$0	$1,156,371	$6,108,541	$17,672,253
107299	301000	0593(095)	I-59 from 65th Ave to US 45 in Meridian	Mill & Overlay			$5,850,000		$0	$650,000	$8,270,971	$14,770,971
107823	301000	0591(124)	I-59 From Pearl River County Line to Black Creek	Mill & Overlay	2020	$17,994,991	$6,169,466		$800,000	$1,900,000	$0	$8,869,466
105858	302000	0201(216)	I-20 Bridge Replacement # 44.9B & Rail Replacements on Bridges # 45.2B&C	Bridge Replacement			$11,825,524		$3,457,555	$864,390	$37,446,242	$53,593,711
107579	301000	0591(121)	I-59 From Lamar County Line to Jones County Line	Pavement Restoration	2021	$17,882,499	$9,000,000		$3,533,486	$1,434,023	$28,314,676	$42,282,185
107579	302000	0592(110)	I-59 From Forrest County Line to 0.3 mile S of Moselle	Pavement Restoration			$8,882,499		$760,539	$1,172,936	$27,004,127	$37,820,101
108091	301000	0552(257)	I-55 From 0.5 mile N of SR 17 to Carroll County Line	Mill & Overlay	2022	$16,437,541	$16,437,541	$2,448,666	$0	$2,098,468	$11,515,325	$32,500,000
Total Amount						$109,539,225	$107,090,559	$2,448,666	$349,680,939	$86,131,891	$425,683,814	$971,035,869

Project # and Detail: Identifies the State ID # and detail of the project
FMIS #: Identifies the Federal project #
NHFP Funds Apportionment: Amount of NHFP Funds estimated to be apportioned to MS for the listed FFY
NHFP Funds Apportionment = NHFP Funds Obligated/Anticipated + NHFP Funds Carryover
NHFP Funds Obligated/Anticipated: Amount of NHFP Funds that have been obligatged or anticipated for the project in the listed FFY
NHFP Funds Carryover: Amount of unobligated NHFP funds that are carried over from a previous project
Other Federal Funds: Amount of non-NHFP Federal Funds obligated for the project in the listed FFY
State Funds: Amount of State Funds obligated for the project in the listed FFY
AC: Amount does not include anticipated NHFP funds

Note:

- FFY2022 NHFP Funds Carryover from FMIS# 0552(229)

This table contains the fiscally constrained list of projects with anticipated funding resources for the identified FFY and are subject to change as amendments are made to the STIP and the MS portion of the NHFN.
Amended March 2022



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