

MISSISSIPPI STATE RAIL PLAN



Photo credit: Canadian National
Railway Company

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

FINAL REPORT
JUNE 2011

Table of Contents

Executive Summary	viii
1. Plan Overview	1
1.1 Purpose of Plan	1
1.2 Federal State Rail Plan Requirements	2
1.3 Accomplishments since the 2004 State Rail Plan.....	2
1.3.8 Grade Crossing Improvements	2
1.3.9 Multimodal Funding Program	2
1.3.10 MDOT Statewide Rail Needs Assessment	3
1.3.11 The Mississippi Railroad Crossing Inventory Project	3
1.3.12 Track Charts for the Class III Railroad Lines.....	3
1.3.13 A Cost Benefit Analysis Tool.....	3
1.3.14 VISSIM Computer Simulation Model.....	4
1.3.15 Hattiesburg Corridor.....	4
1.3.16 Gulfport CSXT Corridor	4
1.3.17 CSXT Harrison County Quiet Zone	5
1.3.18 Gulfport KCS Corridor.....	5
1.3.19 Tupelo Rail Relocation Environmental Assessment	5
1.3.20 Other MDOT/City or County Closure Projects.....	5
2. Stakeholder Outreach.....	6
2.1 Introduction.....	6
2.2 Public Outreach.....	6
2.2.1 Public Sector Comments and Survey Responses	7
2.2.2 Summary of Public Meeting Input	8
2.3 Railroad Outreach.....	8
2.3.1 Class I Railroad Feedback	9
2.3.2 Local and Regional Railroad Feedback.....	10
2.3.3 Mississippi Railroad Association	10
2.3.4 Summary of Railroad Outreach.....	10
2.4 Shipper Outreach	11
2.4.1 Summary of Rail User Outreach	11
2.5 State Rail Vision	12
3. Public Rail Planning	13
3.1 Introduction.....	13
3.2 Mississippi Department of Transportation	13
3.2.1 Safety	13
3.2.2 Freight Division.....	13
3.3 Southern High Speed Rail Commission	14
3.4 Mississippi Development Authority	15
3.5 Public Authorities	16

3.5.1	County and Regional Railroad Authorities	16
3.5.2	Port Commissions.....	16
3.5.3	County Industrial Development Authorities.....	16
3.6	Rail Studies involving Mississippi	16
3.6.1	Freight Rail Studies	16
3.6.2	Passenger Rail Studies.....	17
4.	Freight Rail System Evaluation	18
4.1	Introduction.....	18
4.2	Class I Railroads	18
4.2.1	BNSF Railway Company	18
4.2.2	Canadian National Railway	21
4.2.3	CSX Transportation	21
4.2.4	Kansas City Southern Railway	22
4.2.5	Norfolk Southern Railway	23
4.3	Local and Regional Railroads Serving Mississippi	24
4.4	Local and Regional Railroad Holding Companies	30
4.4.1	Genesee and Wyoming, Inc.	30
4.4.2	Ironhorse Resources, Inc.	30
4.4.3	Patriot Rail Corporation.....	30
4.4.4	Pioneer-RailCorp	30
4.4.5	RailAmerica, Inc.	31
4.4.6	R.J. Corman Railroad Group	31
4.4.7	V&S Railway, LLC	31
4.4.8	Watco Companies, Inc.	31
4.5	Railroad Needs.....	31
4.5.1	Operating Capacity and Bottlenecks	31
4.5.2	Infrastructure Upgrades	34
4.5.3	Needs Summary.....	36
5.	Passenger Rail System Evaluation.....	38
5.1	Background.....	38
5.1.1	Pre-Amtrak Passenger Services.....	38
5.2	Current Amtrak Services	38
5.2.1	Crescent Service	39
5.2.2	City of New Orleans Service	40
5.3	Restoration of Gulf Coast Service	41
5.3.1	Louisiana World Exposition, 1984-1985.....	41
5.3.2	Sunset Limited, 1993-2005.....	42
5.3.3	Gulf Coast Limited, 1996-97.....	42
5.3.4	Post Katrina	42
5.4	Ridership and Financial Performance.....	43
5.4.1	Annual Trends	43
5.4.2	Financial Performance	43

5.5	On-Time Performance	44
5.5.1	OTP Annual Trend	44
5.5.2	Cause of OTP Delays	44
5.6	Stations.....	45
5.6.1	ADA Compliance	46
5.6.2	Station Characteristics	46
5.7	Marion County Recreational Railroad	46
6.	Rail Traffic Flows	49
6.1	Introduction.....	49
6.2	Freight Rail Commodity Profile	49
6.2.1	Inbound Interstate Freight	50
6.2.2	Outbound Interstate Freight.....	51
6.2.3	Through Traffic	51
6.2.4	Intrastate Freight.....	52
6.3	Rail Geographic Profile	53
6.4	Rail Traffic Growth	57
6.5	Rail Corridors	60
6.6	Impacts of Structural Changes	62
6.6.1	North American Gateways	62
6.6.2	Panama Canal Expansion	63
6.6.3	All-water Suez Canal.....	65
6.6.4	Impacts of All-water Service	66
6.6.5	Lazaro Cardenas	66
6.6.6	Free Trade Agreements	69
6.6.7	Corridor Initiatives	69
6.6.8	Summary of Structural Change Impacts.....	74
7.	Freight Rail Intermodal Assessment.....	75
7.1	Introduction.....	75
7.2	Port-Rail Interface.....	75
7.2.1	Gulf Coast Ports.....	76
7.2.2	Mississippi River Ports.....	78
7.2.3	Tenn–Tom Waterway System	80
7.2.4	Port-Rail Summary	81
7.3	Truck-Rail Interface.....	82
7.3.1	Mississippi Intermodal Facilities.....	82
7.3.2	Accessible Intermodal Facilities.....	82
7.3.3	Other Rail-Truck Intermodal Facilities	88
8.	Potential Passenger Corridors.....	91
8.1	Introduction.....	91
8.1.1	Opportunities	92
8.1.2	Challenges	92

8.2	Prospective Routes.....	93
8.2.1	New Orleans-Gulfport-Mobile	93
8.2.2	New Orleans-Meridian-Birmingham-Atlanta.....	98
8.2.3	New Orleans-Jackson-Memphis.....	101
8.2.4	Meridian-Jackson-Shreveport-Fort Worth	104
8.2.5	Jackson-Hattiesburg-Gulfport/Biloxi	106
8.2.6	Needs Summary.....	108
8.3	Priorities and Strategies	108
8.3.1	Multistate Partnerships	108
8.3.2	Freight Railroad Partnerships	109
8.3.3	Continuing Stakeholder Outreach	109
8.3.4	Funding Strategies	109
8.3.5	Multimodal Integration.....	110
8.4	Other States Experience.....	110
8.4.1	Passenger Information and Personalized Service	110
8.4.2	Feeder Bus Service	111
8.4.3	Enhancing Rail Freight Capacity.....	112
8.4.4	Unified Support	113
8.4.5	Equipment.....	113
8.4.6	Station Area Development.....	113
8.5	Impact of Rail Passenger Service Expansion	114
9.	Freight Rail Impacts.....	115
9.1	Introduction.....	115
9.2	Approach, Data Sources and Movements.....	115
9.2.1	Impact Approach and Terminology.....	115
9.2.2	Data Sources and Models	116
9.2.3	Rail Tonnage and Value	117
9.3	Impact Findings	119
9.3.1	Rail Transport-Service Impacts	119
9.3.2	Rail Trade-User Impacts.....	120
9.3.3	Total Rail Activity Impacts	124
9.4	Conclusion	125
10.	Livability.....	127
10.1	Introduction.....	127
10.1.1	Livability Principals	127
10.1.2	Shifting Federal Emphasis.....	128
10.1.3	Economic Impacts vs. Social-Environmental Impacts	128
10.2	The Role of Rail Service.....	129
10.2.1	Passenger Rail.....	129
10.2.2	Freight Rail	130
10.3	Land Use and Smart Growth	132
10.3.1	Smart Growth Enabled	132

10.3.2	Transportation and Land Use Linkage	133
10.3.3	Transportation Network Resilience	133
10.3.4	Land Use and Economic Development Impacts.....	133
10.3.5	Rail Development Challenges	134
10.4	Livable and Sustainable Communities	136
10.4.1	Pollution and Noise	137
10.4.2	Passenger Rail and Sustainable Communities.....	137
10.4.3	Freight Rail and Sustainable Communities	138
10.5	Efficiency, Environmental and Safety Comparisons	139
10.5.1	Factors Affecting Rail Freight Transport	139
10.5.2	Energy Use and Costs.....	140
10.5.3	Environmental Damages and Costs	141
10.5.4	Accident Rates and Costs	142
11.	Rail Safety and Security.....	144
11.1	Introduction.....	144
11.2	Rail Safety.....	144
11.2.1	Highway-Rail Grade Crossing Safety	145
11.2.2	Rail Safety Inspection.....	146
11.2.3	Hazardous Materials	148
11.2.4	Positive Train Control	148
11.2.5	Freight/Passenger Train Crash Response Plan	148
11.3	Rail Security	149
11.3.1	Federal and State Roles in Rail Security	149
11.3.2	Strategic Rail Corridor Network.....	150
12.	Investment Program	152
12.1	Introduction.....	152
12.2	Short Range Rail Investment Program	152
12.3	Long Range Rail Investment Program.....	152
12.4	Project Evaluation Process.....	153
13.	Rail Funding and Finance	155
13.1	Introduction.....	155
13.2	Existing Rail Assistance Programs	155
13.2.1	State Rail Assistance Programs	155
13.2.2	Local Government Rail Assistance	157
13.2.3	Rail Assistance from Regional Commissions and Authorities.....	157
13.2.4	Federal Rail Programs	158
13.3	Rail-Related Legislative Proposals.....	163
13.3.1	Prospective Changes to Federal Rail Assistance Programs.....	163
13.3.2	Federal Surface Transportation Program Proposals	164
13.3.3	Other National Rail Transportation Legislative Proposals.....	164

APPENDIX A: Key Capacity and Operational Improvements on the New Orleans-Gulfport-Mobile Corridor	A-1
APPENDIX B: Key Capacity Improvements on the New Orleans-Meridian-Birmingham-Atlanta Corridor	B-1
Appendix C: Short Range Investment Program.....	C-1
Appendix D: Long Range Investment Program.....	D-1

List of Tables

Table 4-1: Mississippi Rail System in 2009	20
Table 4-2: Railroad Needs	37
Table 4-3: Railroad Needs Restated	37
Table 5-1: Route Segments of the <i>Crescent</i>	39
Table 5-2: Route Segments of the <i>City of New Orleans</i>	40
Table 5-3: Amtrak Causes of Delay to Trains in Mississippi, January, 2010	45
Table 5-4: Amtrak Stations in Mississippi.....	47
Table 6-1: Mississippi's Rail Traffic Directional Flows	50
Table 6-2: Tonnage and Value for Inbound Freight Commodities (2006).....	50
Table 6-3: Tonnage and Value for Outbound Freight Commodities (2006)	51
Table 6-4: Tonnage and Value of Through Freight Commodities (2006).....	52
Table 6-5: Tonnage and Value of Intrastate Freight Commodities (2006).....	52
Table 6-6: Forecasted Rail Traffic for Mississippi by Traffic Type.....	58
Table 6-7: Forecasted Rail Traffic for Mississippi by Commodity	60
Table 6-8: Summary of Traffic on Primary Mississippi Trade Corridors	61
Table 6-9: Comparison of Lazaro Cardenas to SPBP or All-water Service to Houston	68
Table 7-1: Mississippi Rail-Served Water Ports.....	76
Table 7-2: Port Rail Service Rating Summary	81
Table 7-3: Mississippi Port Rail Needs Summary.....	83
Table 7-4: Accessible Bulk Transfer Facilities.....	89
Table 7-5: Automobile Distribution Facilities.....	89
Table 8-1: New Orleans-Gulfport-Mobile Ridership and Ticket Revenues (2012)	98
Table 8-2: New Orleans-Meridian-Birmingham-Atlanta Ridership and Ticket Revenues	101
Table 8-3: Passenger Rail Needs	108
Table 9-1: Inbound Rail Freight Volume and Value by Major Commodity	118
Table 9-2: Outbound/Intrastate Rail Freight Volume and Value by Major Commodity.....	119
Table 9-3: Rail Transport-Service Impacts.....	120
Table 9-4: Rail Trade-User Impacts	122
Table 9-5: Inbound Rail Trade-User Value and Direct Output	122
Table 9-6: Total Rail Activity Impacts	125

Table 9-7: Total Rail Activity Impacts	126
Table 10-1: Unit Comparisons.....	140
Table 10-2: Ton Transport Distance and Energy Cost per Gallon of Fuel	141
Table 10-3: Environmental Damages and Costs per Million Ton-Mile, by Mode.....	142
Table 10-4: Accidents and Costs per Million Ton-Mile, by Mode.....	143
Table 11-1: FRA Reportable Railroad Incidents 2000-2009 in Mississippi.....	145
Table 11-2: FRA Reportable Railroad Incidents 2000-2009 in All States	145
Table 11-3: Current Grade Crossing Projects	146
Table 11-4: Funded but Not Initiated.....	146

List of Figures

Figure 4-1: Mississippi Rail Routes.....	19
Figure 4-2: Mississippi Local and Regional Railroads.....	25
Figure 4-3: Mississippi Primary Rail-Freight Corridors.....	33
Figure 4-4: Rail Car Weight Capability.....	35
Figure 5-1: Crescent Route	39
Figure 5-2: City of New Orleans Route.....	41
Figure 5-3: Sunset Limited Route.....	42
Figure 5-4: Amtrak Riders in Mississippi from FY 2007 to 2009.....	44
Figure 6-1: Origin of Interstate Rail Traffic Terminating in Mississippi	53
Figure 6-2: Inbound Carload Tons by County (2006)	54
Figure 6-3: Destination States of Rail Freight Originated in Mississippi (2006)	55
Figure 6-4: Through Rail Traffic across the Mississippi Rail Network (tons, 2006)	56
Figure 6-5: Historical Rail Traffic in Mississippi (1999-2006).....	57
Figure 6-6: Freight Growth Projected by Global Insight.....	58
Figure 6-7: Share of Rail Traffic (2006).....	59
Figure 6-8: Share of Rail Traffic in 2030	59
Figure 6-9: Asia to U.S. Trade Lanes	62
Figure 6-10: Port of Lazaro Cardenas – Midwest and Southeast Trade Corridors.....	67
Figure 6-11: Rail Corridor Initiatives in Mississippi.....	70
Figure 6-12: CN-NS MidAmerica Corridor	72
Figure 6-13: NS Crescent Corridor.....	73
Figure 7-1: Marine, River and Waterway Ports in Mississippi	77
Figure 7-2: 100-Mile Drays from Intermodal Facilities Serving Mississippi.....	85
Figure 8-1: Megaregions of the United States in 2050	91
Figure 8-2: Potential Passenger Rail Corridors Serving Mississippi.....	94
Figure 11-1: Mississippi Area STRACNET Map.....	151

EXECUTIVE SUMMARY

FEDERAL MANDATE FOR STATE RAIL PLAN

In 2008, the U.S. Congress passed the Passenger Rail Investment and Improvement Act (PRIIA), with the expressed intent of improving passenger rail service in the United States. The Act re-authorized Amtrak and appropriated funds for both Amtrak and individual states to improve rail passenger service, operations, and facilities. The Act also required that states applying for rail passenger funding have an approved State Rail Plan and included new Rail Plan requirements. Past Mississippi State Rail Plans were developed following federal requirements established in the 1970s, primarily for the purpose of preserving light density freight rail branch lines.

State Rail Plan requirements in PRIIA include the following:

- An identification of rail infrastructure issues that reflect consultation with the public and relevant stakeholders;
- A review and inventory of all rail lines in the state and an analysis of the role of rail transportation within a multimodal environment;
- A statement of the state's passenger rail service objectives for routes in the state; and,
- A statement of public financing issues for rail projects and service in the state.

This document was developed by the Mississippi Department of Transportation (MDOT). It meets the requirements set forth in the legislation and public law, and is intended to serve as Mississippi's State Rail Plan. The Plan represents a compendium of recent rail studies supplemented by additional analysis and investigation as required to meet federal requirements.

In addition to meeting the federal requirements, this Plan is intended to establish a state vision for rail in the future and to identify strategies to achieve that vision. For this purpose, the Plan was developed with extensive public participation and involvement by the state's railroads, rail users, and other rail stakeholders in both the public and private sectors.

Ultimately, this and other State Rail Plans will become components of a National Rail Plan being formulated by the Federal Railroad Administration (FRA).

STATE RAIL SYSTEM PROFILE

Freight System

The 2,600-mile Mississippi rail system is operated by five Class I railroads¹ and 27 local or regional rail carriers with 1,873 employees. Each Class I railroad has one or two principal routes

¹ Class I railroads are those with operating revenues of \$378.8 million in 2009.

through the state fed by its own branch lines and connecting carriers. Many of the local and regional railroads own and/or operate lines abandoned or spun off by Class I carriers.

Almost 80 percent of freight rail traffic in Mississippi is traffic passing through the state. The biggest inbound commodity is coal. The biggest outbound commodities are chemicals and allied products.

Twelve of Mississippi's 16 water ports are rail served, and one is planning for rail service.

Currently there is only one railroad-operated trailer/container intermodal facility in Mississippi. Also, there is only one bulk transfer facility. However, there are several facilities located in neighboring states that can serve Mississippi shippers.

Passenger System

Amtrak, also known as the National Passenger Rail Corporation, provides intercity passenger rail services in Mississippi. Amtrak runs two daily trains in Mississippi. These are the *City of New Orleans*, between Chicago and New Orleans; and the *Crescent*, between New York and New Orleans. Amtrak stations in Mississippi generated over 108,000 riders in 2009.

A third train, the *Sunset Limited*, between Los Angeles, New Orleans and Orlando, served Mississippi until Hurricane Katrina in 2005, and has since been suspended. Amtrak has studied the potential restoration of the service, which remains unrealized.

There are 10 Amtrak stations in Mississippi. Three of these stations – Hattiesburg, Jackson and Meridian – provide connections between Amtrak trains and local transit.

Mississippi is a member-state of the Southern High-Speed Rail Commission, which has envisioned a high speed rail service operating between Atlanta and New Orleans via Meridian and Hattiesburg using the Norfolk Southern Railway's mainline. A leg of this service would operate along the Gulf Coast between New Orleans and Mobile on the CSX Transportation mainline.

RAIL SAFETY AND SECURITY

The rail safety area most visible to the general public and for which the public is most exposed to potential harm from rail operations is the interface between the rail and highway systems at grade crossings. There are 4,209 highway-rail crossings in Mississippi, with 2,282 located on public roadways.

Since the 2004 Mississippi State Rail Plan, MDOT has completed 316 grade crossing improvement projects. There are 21 crossing improvement projects ongoing, and another 46 funded but not yet initiated.

MDOT employs five rail safety inspectors, whose duties include, among other things, inspecting all tracks, crossing surfaces, pavement markings and signs for conformity with federal guidelines and regulations. MDOT also employs four rail safety specialists who report defects to the FRA and the subject railroads for corrective action and/or repair.

At the state level, MDOT also oversees the registration and regulation of transporters of hazardous waste. MDOT's Office of Enforcement oversees compliance. In the 10-year period, 2000 to 2009, only three hazardous material incidents in Mississippi were reported to the FRA.

The focus of rail security has changed significantly over the past decade. In response to potential terrorism threats to the transportation system, new federal agencies have been established to oversee and provide assistance to ensure the security of transportation modes. The primary agencies responsible for security related to transportation modes in Mississippi are the U.S. Department of Homeland Security and the State Departments of Public Safety and Transportation.

PUBLIC AND STAKEHOLDER OUTREACH

The Stakeholder Outreach effort conducted for the Mississippi State Rail Plan was comprised of three elements: public outreach, conducted through two Public Meetings in different parts of the State; solicitation of input from the state's railroads through a presentation to the Mississippi Railroad Association and subsequent surveys and interviews; and, outreach to selected shippers through surveys.

The purpose of this outreach effort was to provide adequate and reasonable notice of the state's intent to develop a State Rail Plan and an opportunity for rail freight and passenger stakeholders in Mississippi to offer comments on existing services and potential improvements for the future.

In general, the outreach effort revealed interest in passenger rail services, support for infrastructure improvements for small railroads, concern with grade crossing safety, and general satisfaction with regard to the freight rail service received by shippers.

VISION

Based on the feedback received from the outreach effort, MDOT developed the following vision statement for rail transportation in the state.

The future Mississippi rail system will provide safe reliable mobility for people and goods. The state's rail infrastructure and levels of service will expand to provide increased transportation efficiency, cost effectiveness, accessibility, capacity and intermodal connectivity to meet freight and passenger market demands. The state will continue to make strategic investments to accomplish these goals and objectives as well as to enhance the overall safety of the state rail system.

PROGRAM OF PROJECTS

The 2008 PRIIA legislation requires State Rail Plans to include a Short-Range Rail Investment Program, which comprises rail capital projects to be considered for the next five years, and a Long-Range Investment Program, which comprises rail capital projects to be considered for years 6 through 20 that are expected to be undertaken or supported in whole by the state.

A comparison of the vision to rail service as it exists today will identify a program of improvements required to realize the state rail vision. These improvements can be prioritized as near term and longer term improvements. Justification for these projects will rely on the public benefits that they generate, including jobs created or preserved, crossing safety enhanced, emissions reduced, and general quality of life bettered, among others. If the state seeks federal funding for a particular rail project, it must be cited in the state's Rail Plan.

This Plan identified short term improvements for publicly owned railroads and crossing improvements totaling to \$2.4 million; and crossing improvements totaling \$9.55 million. Longer term improvements for station upgrades and new or restored passenger rail services totaled \$549.4; and for freight-rail-related track and structure upgrades, highway-rail projects, and operating and capacity improvements totaling \$561.45 million.

1. PLAN OVERVIEW

1.1 Purpose of Plan

The purpose of the Mississippi State Rail Plan is to set forth a vision for the state's freight and passenger rail system. That vision should be grounded on what the users of the rail system – the rail shippers, the passengers, the communities served, and the railroads – want and need for their rail service. What appears in this document is an articulation of a vision for the Mississippi rail system, a description of the process that developed that vision, and a program of improvements over time needed to implement that vision.

A comparison of the vision to rail service as it exists today will identify a program of improvements required to realize the state rail vision. These improvements can be prioritized as near term and longer term improvements. Justification for these projects will rely on the public benefits that they generate, including jobs created or preserved, crossing safety enhanced, emissions reduced, and general quality of life bettered, among others.

The Passenger Rail Investment and Improvement Act of 2008 (PRIIA) requires that new rail intercity passenger projects be included in a State Rail Plan to qualify for the federal financial assistance provided in the legislation. Congress exempted grant funds provided through the American Recovery and Reinvestment Act of 2009 (ARRA) from the requirement. There is currently no specific requirement that future federal funding for rail projects would require inclusion in a state's Rail Plan. However, it is likely that any prospective federal rail program would require evidence that a potential project fit into the applicant's rail development plan, including evidence that the project is included on a prioritized long-term rail program. Existing and prospective projects included in State Rail Plans would meet those objectives.

This Rail Plan is a product of the development effort and contains both freight and passenger components. The last rail plan was prepared in 2004. That plan was followed by a detailed statewide assessment of railroad needs including Class I and short line carriers in 2007. This plan was prepared to conform to the requirements of the Passenger Rail Investment and Improvement Act of 2008 and the requirements of House Bill no. 1713 as codified at Section 57-43-1. Ultimately, this and other state rail plans will become components of a National Rail Plan being formulated by the Federal Railroad Administration (FRA).

The Rail Plan was developed by the Mississippi Department of Transportation (MDOT) in consultation with the Mississippi Development Authority (MDA), the Southern High-Speed Rail Commission (SHSRC), and the railroads operating in the state. MDOT is also charged to work with the SHSRC to promote passenger rail travel and service and recommend related projects

including, but not limited to, capability of 110-mph operating speeds and development of corridors connecting major city pairs.

1.2 Federal State Rail Plan Requirements

The requirements of a State Rail Plan are specified in Public law 110-432. In brief, these are at a minimum:

- A profile of the existing freight and passenger services in the state.
- A statement of passenger rail services objectives for the state.
- A summary of the economic and environmental impacts of rail service in the state.
- A long term investment program for freight and passenger rail service.
- A statement of public financing issues for all rail projects and service in the state.
- Outreach to major rail service stakeholders to identify rail infrastructure issues in the state.
- A review of major passenger and freight intermodal connections in the state, including river and seaports, and prioritized options to maximize service integration and efficiency.
- A review of public funded projects within the state to improve rail transportation safety and security.
- A performance evaluation of passenger rail services and potential strategies for improvements.
- A compilation of studies and reports on high speed rail corridor development.
- A statement that the state is in compliance with 49 U.S.C. 22102, which prescribes what a state needs to do to qualify for federal assistance for rail projects.

This State Rail Plan includes all of these items.

1.3 Accomplishments since the 2004 State Rail Plan

1.3.8 Grade Crossing Improvements

A total of 316 highway-rail crossing improvement projects have been completed since the preparation of the 2004 Mississippi State Rail Plan. The majority of these projects have been on the Meridian Speedway and the Norfolk Southern Railway's (NS) Meridian-Hattiesburg-New Orleans line.

1.3.9 Multimodal Funding Program

This fund, established in 2002, is to be expended by the Department of Transportation for the improvement of all modes of publicly owned (State, county, or municipality; Rail, Airport, Public Transit, and Port) property. Funds are allocated to the program by mode. Rail projects are eligible for 12 percent of the funds available. Since 2005 a total of \$7.2 million was made available through the program for rail projects.

1.3.10 MDOT Statewide Rail Needs Assessment

The 2007 report evaluated Class I lines (lines belonging to large rail systems) and Class III lines (small railroads) located in the State of Mississippi, and their impact on the economic well-being of the state. The report presented an economic analysis for each of the Class I and III railroads, and suggested an investment strategy for each of the Class III railroads. It also identified the associated economic impact that can be expected as a result of the investment strategies for the Class III railroads. Further, it provided MDOT with a comprehensive database of information on the state's railroads.

1.3.11 The Mississippi Railroad Crossing Inventory Project

This project developed a comprehensive database for all at-grade public and private railroad/roadway crossings in the State of Mississippi. The final deliverable was the Mississippi Railroad Crossing Management Information System (MRCMIS); a web-based database application designed using GeoMedia Pro software. Trimble XM handheld GPS units linked with Nikon P3 Wi-Fi cameras were used by field crews to record inventory database information utilizing programmed selection screens. The MRCMIS incorporated all the fields in the current Federal Railroad Administration (FRA) crossing inventory plus ten additional MDOT fields for additional information regarding the crossing. The MRCMIS includes a web-based graphic user interface (GUI) to facilitate entry, edit, and analysis of crossing data.

1.3.12 Track Charts for the Class III Railroad Lines

Track charts were developed using existing inventory information collected for the Mississippi Railroad Crossing Management Information System for some of the railroads in Mississippi. Additional sources for the development will be from Geographical Information System (GIS) shape files, images, and other digital information provided by MDOT. Using MDOT Digital Orthographic Quarter Quadrangle (DOQQ) files a horizontal alignment for each railroad was developed. Track curvature and other railroad features were included in the track charts. The entire railroad line, or a particular section of the line, may be viewed and printed for the selected track chart.

1.3.13 A Cost Benefit Analysis Tool

This tool, the Mississippi Grade Crossing Assessment Model (MGCAM), was also developed and validated against the Federal Railroad Administration's GradeDec.Net-System for Highway-Rail Grade Crossing Investment Analysis Tool. In the development of MGCAM, FRA staffers were consulted to insure the most recent assumptions and methodologies, which were transmitted from the GradeDec.Net platform to a spreadsheet tool. This allows individuals to analyze the change in predicted accidents due to grade crossing improvements through application of a cost-benefit analysis tool. In addition, the model can also calculate the average vehicular delay, time-in-queue, and emissions for each crossing.

1.3.14 VISSIM Computer Simulation Model

This model displays and provides measures of effectiveness to demonstrate the impact of closing selected at-grade railroad crossings in the central business district of Wiggins, MS. The model showed the current situation and up to three closure alternatives.

1.3.15 Hattiesburg Corridor

For the past seven years, extensive engineering, traffic, and planning studies have been invested in the City of Hattiesburg for a railroad safety consolidation plan on the Canadian National Railway (CN) line. This has been a collaborative effort between the City of Hattiesburg, CN, and MDOT. Additional communication and feedback from stakeholders, citizens of Hattiesburg, and emergency response personnel on the consolidations and safety improvements by the railroad company were considered.

There are 29 crossings on the CN line in the City of Hattiesburg. After working with the City and the CN, a project concept was prepared and presented at a public hearing. All comments were forwarded to the City for their consideration before entering into an agreement for this project. The City Council voted 5-0 on April 20, 2010 to improve 16 crossings, consolidate and abolish 10 crossings, reopen one crossing, reconfigure access into the historic downtown area, upgrade flashers and interconnect with existing traffic signals at one crossing, and convert one crossing into a pedestrian only crossing. Over \$3,000,000 dollars will be invested by MDOT and CN, at no cost to the city, to have every remaining open public crossing upgraded and improved. The project is expected to be completed over a maximum of three years. Notices to Proceed for the first six crossings were issued November 1, 2010, and all but two crossings have been closed as of yearend 2010.

Hattiesburg crossing improvements are in addition to the 316 completed MDOT crossing projects mentioned above.

1.3.16 Gulfport CSXT Corridor

The City of Gulfport is a community of approximately 71,705 residents through which CSX Transportation operates a main railroad line in a generally east-west direction. The railroad also operates approximately 18 to 19 freight trains per day through the City of Gulfport, and trains are authorized to operate at a maximum speed of 60 MPH.

The city adopted a Resolution on September 16, 2008 for the installation of automatic flashing light signal highway-rail grade crossing traffic control devices at eight of the 33 public highway-rail grade crossing locations, and to permanently close and abolish eight other public highway-rail grade crossings. CSXT agreed to perform work at 30 percent of all costs and to provide labor for the closure of the highway/rail grade crossings. MDOT funded the remaining 70 percent of all incurred project costs. Total project costs are estimated to be approximately \$1,500,000 to be

completed over a maximum of three years. All closures have been finalized as of November 11, 2010, and construction is ongoing at all improvement locations.

Gulfport crossing improvements are in addition to the 316 completed MDOT crossing projects mentioned above.

1.3.17 CSXT Harrison County Quiet Zone

Third Avenue, in the Henderson Point area of Harrison County, is being converted to a Quiet Zone.

1.3.18 Gulfport KCS Corridor

An Environmental Assessment of the KCS line from Gulfport (mile post 0.0) to Hattiesburg (Palmer's crossing mile post 67.5) commenced in January, 2011. Project objectives are to effect renewal of rail, crossties, crossings, and turnouts, upgrade 27 sets of crossbucks to gates and flashers, maintain a number of bridges and construct one 8,500-foot long siding in order to allow double stack containers, 286,000-lb. car weights, and 49 mile per hour operation.

1.3.19 Tupelo Rail Relocation Environmental Assessment

MDOT has provided the Federal Railroad Administration (FRA) an Environmental Assessment for this project, which involves BNSF Railway operating on a raised structure to eliminate at-grade crossing traffic hazards.

1.3.20 Other MDOT/City or County Closure Projects

In addition to the closures mentioned above, there were 11 other closure projects performed by MDOT, cities and counties since 2004. The closures were in the following Mississippi communities: Brookhaven, Clinton, Crystal Springs, Eastabuchie, Ellisville, Lake, Mize, Moss Point, Lake, and Vicksburg.

2. STAKEHOLDER OUTREACH

2.1 Introduction

The Stakeholder Outreach effort conducted for the Mississippi State Rail Plan was comprised of three elements: public outreach, conducted through two Public Meetings in different parts of the State; solicitation of input from the state's railroads through a presentation to the Mississippi Railroad Association and subsequent surveys and interviews; and, outreach to selected shippers through surveys.

The purpose of this outreach effort was to provide adequate and reasonable notice of the state's intent to develop a State Rail Plan and an opportunity for rail freight and passenger stakeholders in Mississippi to offer comments on existing services and potential improvements for the future.

In general, the outreach effort revealed interest in passenger rail services, support for infrastructure improvements for small railroads, concern with grade crossing safety, and general satisfaction with regard to the freight rail service received by shippers. A more detailed description of the outreach process and feedback are described below.

2.2 Public Outreach

Two Public Meetings on the Rail Plan were held in the summer of 2010. The first was held in Gulfport on July 20th at the Gulf Regional Planning Commission, and the second in Jackson on July 22nd at the Central Mississippi Planning and Development District. The meetings were advertised in the local press. Attendees at the two meetings included members of the general public; local, regional, state and federal planners; an Amtrak representative; and a representative of the Mississippi Railroad Association.

A representative of Wilbur Smith Associates, the consulting firm assisting MDOT with the State Rail Plan, provided a PowerPoint presentation at both meetings that explained the purpose and requirements of State Rail Plans, Mississippi's rail planning process, and a brief summary of existing freight and passenger services in Mississippi as well as planned high speed rail passenger service improvements.

Issues and concerns were solicited from attendees, who were provided with a Rail Stakeholder Survey and comment cards. The survey asked for comments pertaining to:

- A state rail vision;
- Operational and infrastructure problems and needs;
- Strategies for investments; and
- General comments.

2.2.1 Public Sector Comments and Survey Responses

Public outreach respondents were generally positive with regard to opportunities for freight and passenger rail in the state. Several noted that freight rail service will continue to be important for economic development, and others saw the potential for new passenger services, including:

- Restoration of Gulf Coast service;
- Commuter service between the Gulf Coast to New Orleans;
- More service between Memphis and New Orleans; and,
- New services in the Jackson-Hattiesburg-Gulfport corridor and on the Meridian Speedway.

Respondents noted that such factors as the growth in the national economy, relocation of business to the Southeast, higher costs for other modes, and roadway congestion were triggering increased use of and interest in freight and passenger rail options. The potential for high speed rail linking Mississippi with Atlanta and Mobile to the east and New Orleans and Houston to the west was also discussed.

Recommendations on how to improve the efficiency of the state's rail system included:

- Joint use of track for freight and passenger service (all passenger trains in Mississippi today utilize freight rail lines);
- Implementation of additional passenger services;
- Increasing line capacity to allow for more trains;
- Grade crossing closures; and,
- Offering tax credits to shippers to use rail services.

With regard to recommended changes to rail policies and programs in Mississippi, respondents suggested further consideration of programs to provide financial assistance for rail line improvements and expansion of automatic warning devices (gates and flashing lights) to improve safety at highway-rail at-grade crossings, crossing closures, and increased attention on crossing safety education.

Respondents also identified existing or potential rail bottlenecks at the following locations:

- Downtown Jackson (CN and KCS cross at-grade);
- The CN-KCS route Jackson-Hattiesburg-Gulfport (planned for handling marine-related traffic between Jackson and Gulfport); and,
- Tupelo (crossing of the BNSF and KCS).

Passenger and freight projects identified for MDOT consideration included:

- Commuter rail between the Mississippi Gulf Coast and New Orleans;
- High speed rail along the Gulf Coast to strengthen the multimodal system in the coastal area;
- Restoration of the Columbus-Greenwood line to encourage biomass companies to consider establishing operations in Mississippi;
- Support for port and harbor development;
- Improvement of the CN-KCS routing Jackson-Hattiesburg-Gulfport for double-stack container trains and passenger service to encourage economic and port development, to provide an emergency route in case of disasters, and to enhance livability by providing an alternative transportation mode to cars and highways;
- Passenger service between Jackson and Meridian to provide connections to the existing Amtrak *Crescent* in Meridian and encourage train ridership; and,
- Extending rail freight rail intermodal service into Marshall County on KCS to encourage development of distribution centers and job creation.

2.2.2 Summary of Public Meeting Input

Stakeholders attending the two July 2010 Public Meetings demonstrated an understanding that freight rail service is important to Mississippi's economic success, both in terms of retaining existing business and attracting new ones. To this end, rail bottlenecks should be rectified.

Stakeholders also expressed interest in new passenger services and enhancing existing services as a means to improve mobility for the state's residents. Connectivity to other trains and modes was seen to be important to the success of improved passenger service. Improvements in highway-rail grade crossing safety were also important in stakeholders' minds.

Lastly, stakeholders were able to identify various metrics by which improvement projects could be identified and prioritized. Metrics named most frequently boiled down to measuring the extent to which projects could generate public and private benefits outweighing the costs of the investments.

2.3 Railroad Outreach

The outreach effort to the railroads operating in Mississippi consisted of surveys and interviews, plus a presentation on the purpose of the Mississippi State Rail Plan to the Mississippi Railroad Association, the industry association representing the majority of carriers in the state.

MDOT prepared letters to owners, executives, or representatives of the five Class I railroads and 27 local and regional railroad operators requesting their input. Attached to each letter was a survey aimed at soliciting issues, concerns and needs with regard to their operations in Mississippi. Those carriers who were the subject of the 2007 MDOT *Statewide Rail Needs*

Assessment also received narratives from that report pertaining to their respective operations, with a request to update any pertinent information. Railroads were asked to provide input regarding the following:

- Policy and program changes in Mississippi to better meet transportation needs;
- Safety issues that need to be addressed;
- Identification of rail bottlenecks that slow the progress of rail traffic; and,
- Ways MDOT can better serve the state's railroads.

The responses are grouped below by type of carrier due to different functions performed by each carrier type, for example Class I carriers predominately move traffic through the state, while the local and regional carriers concentrate on serving shippers located along their lines. As a general rule, Class I railroads also have greater financial resources at their disposal than do the smaller railroads to self-fund many improvements.

2.3.1 Class I Railroad Feedback

2.3.1.1 Program and Policy Changes

Recommendations regarding public program and policy changes included allowing railroads to compete for state bond funds for rail infrastructure improvements. Projects would be selected based on the level of public benefits, such as safety improvements and enhancements to economic development. It was also recommended that the state avoid implementation of policies that could lead to more freight moving over public highways and bridges. Related benefits would include reducing the cost of maintaining the state's highway system, as well as related improvements to public safety and the environment.

2.3.1.2 Safety Issues

Class I carriers noted highway-rail crossing conflicts as the key safety concern in the state. Related recommendations included increased crossing closings and modifying the state driver's exam to include additional questions and support material that center on railroad grade crossing safety.

2.3.1.3 Rail Bottlenecks

The rail bottlenecks noted were at the at-grade crossing of KCS and CN in Downtown Jackson and BNSF bridges between Amory and Columbus, which cannot handle maximum loaded car weights of 286,000 lbs. BNSF also reported that its Mississippi River bridge in Memphis, a single track bridge, is a bottleneck affecting train movements on the Transcon, which passes through the northeast quadrant of Mississippi.

2.3.1.4 Ways for MDOT to Better Serve the State's Railroads

It was recommended that MDOT regularly provide railroads with updates and coordination on existing projects that include construction schedules and project costs. MDOT could also better

update railroads on project opportunities that benefit the general public, the State of Mississippi, and the railroads. One Class I railroad recommended that MDOT help facilitate freight rail improvement projects and initiate public conversations about the benefits of freight rail in Mississippi.

2.3.2 Local and Regional Railroad Feedback

2.3.2.1 Program and Policy Changes

Most of the short line railroads responding to the survey voiced a desire for state funding in the form of grants or financial assistance through loans for line upgrades to improve operations and/or handle 286,000-lbs. car weights and system expansion. Other suggestions included programs that raise awareness of the benefits of rail transportation and of convenient and efficient ways for potential shippers to obtain railroad contact information. Tort reform to minimize frivolous lawsuits impacting railroads was also suggested.

2.3.2.2 Safety Issues

Safety issues voiced by short line carriers focused on highway-rail at-grade crossing safety and crossing signage maintenance.

2.3.2.3 Rail Bottlenecks

Local and regional carriers identified lighter track (track insufficient to handle heavier car weights), limited yard space, and poor or non-existent interchanges with Class Is or other modes as their chief bottlenecks.

2.3.2.4 Ways for MDOT to Better Serve the State's Railroads

Short line railroads generally urged MDOT to find ways to provide funding or financial support to enable railroads to improve their infrastructure. Other suggestions included MDOT promoting rail as a key component of the state's transportation system in its comprehensive transportation plans and a joint effort by MDOT and the railroads working collaboratively to bring industry and jobs to the state.

2.3.3 Mississippi Railroad Association

As previously mentioned, a presentation on the State Rail Plan was made to this association, which represents 16 Class I, local and regional railroads operating in Mississippi. The presentation was the same as that made at the two Public Meetings. The presentation occurred on July 21st in Biloxi. Attendees were requested to update their respective sections of the MDOT *Statewide Rail Needs Assessment* and provided surveys designed to capture issues most important to them.

2.3.4 Summary of Railroad Outreach

Both large and small railroads expressed interest in some form for state support for infrastructure improvements. Highway-rail at-grade crossing safety improvement is an issue for large and

small railroads alike. The major rail bottleneck identified by Class I railroads is where CN and KCS cross in Downtown Jackson. Smaller railroads were more concerned with needed track upgrades to handle heavier car weights and improved access to Class I railroads and thereby to the national railroad system.

2.4 Shipper Outreach

The stakeholder outreach portion of the Mississippi Rail Plan included a survey of Mississippi rail shippers. The purpose of the survey was to solicit shippers' opinions on railroad performance. The survey was intended to provide insight for policies and regulatory development for MDOT to improve rail service for shippers.

The study team sent out surveys to 50 freight transportation users, both highway and rail. The list included businesses within the electric power, manufacturing, distribution and warehousing, farming, and wholesale industry segments. These shippers and receivers of freight use all of the multimodal corridors in the state.

Businesses were asked about their companies' freight volume, modal selection, expectations and performance of the rail service they received. They were also asked to express other concerns and needs. The response rate was 36 percent. Over 70 percent of the responses were from shippers currently using freight rail services. The remainder currently are not using rail. Six rail shippers used intermodal rail services (trailer or container on a railcar). Among the carload (boxcar, flatcar, gondola, hopper car, etc.) users, 30 percent have transportation demand of over 10,000 rail cars per year; another 30 percent approximately 1,500 rail cars per year; and the remaining users between 200 and 300 cars per year.

The shippers were asked to comment on:

- On-time delivery;
- Cost (rates);
- Loss and damage;
- Equipment availability; and,
- Service flexibility.

The surveyed companies were asked to grade the importance of these factors to their businesses and the actual performance they received from the railroads.

2.4.1 Summary of Rail User Outreach

In general, all five of the dimensions surveyed were very important to the state's rail shippers. And for the most part, the shippers were satisfied with the service they receive from the railroads.

The shippers' only areas of concern were inbound on-time performance and outbound shipping rates. Only a few shippers expressed concern about access to rail lines and equipment availability. The issue of rail equipment availability is typically not an area of public agency involvement.

On a positive note, the shippers felt that railroads are providing flexible and damage free service.

2.5 State Rail Vision

The following are emphasis areas identified by stakeholders and the public during the outreach for consideration in the development of a vision and associated goals and objectives.

- A rail system offering new passenger systems, potentially with high speed intercity and commuter trains, to enhance mobility for state residents.
- An efficient rail system, with increased capacity for both freight and new passenger trains. Rail bottlenecks should be rectified in order to allow fluid rail operations. Intermodal connections should encourage transfers of people and goods between modes.
- A freight rail service offering shippers expeditious service at equitable rates.
- A freight and passenger rail system that spurs economic opportunity for state residents.
- A safer rail system, with continuing investments in grade crossing improvements and crossing safety education.
- A short line freight rail system fully capable of handling heavier car weights (286,000 lbs.) and improved access to the national rail system.
- A state-sponsored funding program to help short lines make the investments for heavier car loadings.

Based on these vision components collected from the outreach effort, MDOT has developed the following vision statement for rail transportation in the state.

The future Mississippi rail system will provide safe reliable mobility for people and goods. The state's rail infrastructure and levels of service will expand to provide increased transportation efficiency, cost effectiveness, accessibility, capacity and intermodal connectivity to meet freight and passenger market demands. The state will continue to make strategic investments to accomplish these goals and objectives as well as to enhance the overall safety of the state rail system.

3. PUBLIC RAIL PLANNING

3.1 Introduction

Public railroad and rail service, planning, preservation and improvement involve a number of parties:

- The Mississippi Department of Transportation, (MDOT);
- The Mississippi Development Authority, (MDA);
- The Southern High – Speed Rail Commission, (SHSRC); and,
- A variety of local and regional rail authorities.

The respective roles of these agencies are discussed below. The section concludes with a listing of freight and passenger rail studies undertaken by public agencies pertaining to services in Mississippi since 2000.

3.2 Mississippi Department of Transportation

The rail-related duties and responsibilities of the MDOT are executed by the Rail Division of the Office of Intermodal Planning. The rail unit of the division “focuses on the development and safety of the state’s rail transportation system for future freight and passenger service through a comprehensive program of capital improvement and strategic planning.”

3.2.1 Safety

The safety component is addressed through the efforts of five regional Rail Inspectors and four Rail Safety Specialists who are part of the MDOT Office of Enforcement. Their duties include responding to derailments, including hazardous material spills and collisions and investigating complaints involving railroads. They are further charged with assuring that railroad-highway crossings comply with state and federal regulations and that rail operations are conducted in a safe and secure manner.

Many of these functions were previously the responsibility of the Public Service Commission, but all of that body’s rail responsibilities, with the exception of rate-making, were transferred to MDOT (Section 65-1-2(9)). The Mississippi Transportation Commission was authorized to employ five inspectors and one railway safety coordinator to fulfill these duties (Section 65-1-173), and MDOT was designated to be exclusive in respect to railroad-highway grade crossings, except where preempted by federal jurisdiction (Section 65-1-175).

Rail safety in Mississippi is discussed further in Section 11.

3.2.2 Freight Division

The MDOT Freight Division supports the state’s intermodal investments by managing its rail and ports multimodal grant and loan programs. In addition, the Freight Division works with the

Traffic Engineering Division to help initiate the operation and safety duties that it is charged with concerning federal mandates at rail grade crossings. All planning, feasibility, and environmental studies for the Office of Intermodal Planning will originate in the Freight Division. It is MDOT's goal to provide a comprehensive multimodal transportation program to support the future needs of the economy within the 21st century marketplace.

The Freight Division is responsible for developing and executing:

- The State's Strategic Investment Plan for Freight, based on the Mississippi Goods Movement and Trade Study, and build on regional participation and support for the plan through working together with freight system partners;
- The state and national policy forming a branch of freight logistics;
- A research and development program;
- Public Outreach Economic Development with public and private sector involvement and support; and,
- Managing MDOT's Revolving Rail Loan Program for capital freight improvements, the MDOT Multimodal Fund, the Intermodal Connector Improvement Program (ICIP), and MDOT's participation in the Mississippi Development Authority's (MDA) Local Governments Freight Rail Service Project Revolving Loan Fund, also discussed at paragraph 3.4.

The Freight Division has the following affiliations:

- University research and development: state and federal policy recommendations.
- Professional associations with stakeholders: American Association of State Highway and Transportation Officials (AASHTO), FRA, Federal Highway Administration (FHWA), Institute for Trade and Transportation Studies (ITTS), and MDA); and,
- Affiliations with trucking, port and railroad industry partners (American Trucking Association (ATA), the Association of American Railroads (AAR), and the American Association of Port Authorities (AAPA).

3.3 Southern High Speed Rail Commission

The Commission (SHSRC) is another of the three parties to participate in preparation of the Rail Plan. Section 57-45-1 is the codified enabling legislation for Mississippi to participate in the Mississippi-Louisiana-Alabama Rapid Rail Transit Compact and includes provisions for its composition and governance. The Compact is recognized on the federal level and granted

Congressional consent in PL97-213(HR4903). Its purpose is to “promote passenger rail transportation on a regional basis.”²

The Commission, a successor of the Compact, is comprised of the governor of each member state, a representative from the DOT in each state, and five citizen members from each member state appointed by the respective governor.

The Commission’s initiatives in the late 1980s and throughout the 1990s resulted in the development of new Amtrak regional routes, albeit most were short lived. It also participated in an effort in the 1980s to establish a federal high-speed rail initiative resulting in the designation of five high-speed rail corridors in 1991’s Intermodal Surface Transportation Efficiency Act (ISTEA), but the Commission’s three states were left out. Continued effort, however, resulted in designation of the Gulf Coast High-Speed Rail Corridor in the 1998 Transportation Efficiency Act of the 21st Century (TEA-21) and made it eligible for federal high-speed rail planning funds.

Funding since that time, \$2.2 million in Next Generation High-Speed Rail Funds, have been appropriated by the Congress for the Commission’s use. These resources have been applied to an effort to develop the full Corridor Plan. Development of the Plan will continue as new monies become available. In addition, over \$4 million in 1103C Grade Crossing Hazard Elimination funds have been received and used by member DOT’s to improve highway-rail grade crossings along rail lines within the designated Gulf Coast Corridor.

3.4 Mississippi Development Authority

The Authority (MDA), another participant in the preparation of this Rail Plan, is the lead agency in the state’s economic and community development effort. Its mission is “to foster a strong state economy and vibrant communities through innovation, use of talent and resources to improve our citizen’s lives.”³ In recognition of the role played by rail in fulfilling its mission, the MDA has adopted several means of assisting in retaining and improving rail infrastructure and service. These include the Freight Rail Service Revolving Loan Program (RAIL) which makes loans available to municipalities and counties.

More information on RAIL and other MDA funding programs are discussed in Chapter 11 of this document.

² Taken from SHSRC website. The majority of the information presented in this discussion of the SHSRC was obtained from the same source.

³ Taken from MDA website as are other parts of the discussion.

3.5 Public Authorities

In addition to the three agencies previously discussed, there are a number of local and regional public authorities that also have roles in preserving, construction, and operating railroads. Several examples follow.

3.5.1 County and Regional Railroad Authorities

Any county⁴ or municipality may create a railroad authority (Section 19-29-7), and two or more counties can together create a regional railroad authority. Among other powers, those authorities have the power “To plan, establish, acquire, construct, enlarge, reconstruct, improve, operate, maintain, replace, repair, extend, improve, regulate and protect railroad properties and facilities within its boundaries” (Section 19-27-17). The authorities also, under the same Section, have the power to lease rail properties under their control to others.

3.5.2 Port Commissions

Counties bordering on the Mississippi River are not eligible for county railroad authorities if they have a port commission that has the power to acquire railroads or railway facilities deemed necessary for development of its port (Section 59-7-453).

3.5.3 County Industrial Development Authorities

Local Industrial Development Authorities are empowered to engage in work of internal improvement, including the construction of railroads necessary or required for industrial or commercial use and development within the county (Section 51-3-1(1)).

3.6 Rail Studies Involving Mississippi

3.6.1 Freight Rail Studies

MDOT Statewide Rail Needs Assessment, 2007 – This report evaluated Class I lines (lines belonging to large rail systems) and Class III lines (small railroads) located in the State of Mississippi, and their impact on the economic well-being of the state.

Environmental Assessment of the KCS line from Gulfport to Hattiesburg, 2011 – This report detailed the requirements for upgrading the KCS line to handle double-stack container trains at higher speeds than are presently allowable on the line.

Tupelo Rail Relocation Environmental Assessment, 2010 – This document explored the feasibility of relocating the BNSF Railway mainline onto a raised structure to eliminate at-grade crossing traffic hazards.

⁴In which there are railroad properties, or in which they existed but were abandoned after Feb. 5, 1976.

Mississippi Goods Movement and Trade Study, 2010 – This study analyzed the existing freight transportation network, including rail, against expected future freight needs and trade opportunities. The study identified existing and prospective strengths and weaknesses, as well as future strategies and directions required for both transportation and economic development needs.

3.6.2 Passenger Rail Studies

Gulf Coast High-Speed Rail Corridor, New Orleans to Mobile Corridor Development Plan, Volume I, Summary Report, Southern Rail Rapid Rail Transit Commission (now the Southern High-Speed Rail Commission), October 2006 – This report recommended improvements that would be phased over time based on funds available and the frequency of services to be operated.

Gulf Coast Service Plan Report, Amtrak, 2009 – This report explored options for restoring Amtrak passenger service on the Gulf Coast route east of New Orleans.

Gulf Coast High-Speed Rail Corridor Development Plan, Phase I: Improvement Implementation Plan – Meridian to New Orleans, Volume I, Summary Report, September 2002 - This report recommended improvements that would be phased over time based on funds available and the number of frequencies to be operated.

Gulf Coast High-Speed Rail Corridor Plan, Lake Charles to Meridian Corridor Development Plan, Southern Rapid Rail Transit Commission, June 2007 – This report included ridership and revenue forecasts for improved service between (1) New Orleans, Gulfport, and Mobile and between (2) New Orleans, Meridian, Birmingham, and Atlanta.

A Report on Accessibility and Compliance with the Americans with Disabilities Act of 1990, Amtrak, 2009 – This study identified needs to assure ADA compliance and a state of good repair at Amtrak stations, including four in Mississippi.

4. FREIGHT RAIL SYSTEM EVALUATION

4.1 Introduction

The 2,600-mile Mississippi rail system is operated by five Class I railroads⁵ and 27 local or regional rail carriers with 1,873 employees. Each Class I railroad has one or two principal routes through the state fed by its own branch lines and connecting carriers. Many of the local and regional railroads own and/or operate lines abandoned or spun off by Class I carriers. Additional information on the state's railroads and facilities can be found in Section 6, Freight Rail Intermodal Assessment.

4.2 Class I Railroads

Almost 1,700 miles, or two-thirds of the state's rail system mileage, are owned by the Class I railroads. Each railroad's routes are shown on **Figure 4-1** and statewide mileages are the subject of **Table 4-1**. A summary of each Class I carrier is provided below.

4.2.1 BNSF Railway Company

Burlington Northern and Santa Fe Railway (BNSF) was created on September 22, 1995, from the merger of Burlington Northern Inc., parent company of Burlington Northern Railroad, and Santa Fe Pacific Corporation, parent company of the Atchison, Topeka and Santa Fe Railway. The railroad was later renamed the BNSF Railway, and in February of 2010 became a subsidiary of Berkshire Hathaway, Inc. The railroad operates 32,000 route miles in 28 states and two Canadian provinces, and as such, covers the western two-thirds of the United States, stretching from major Pacific Northwest and Northern and Southern California ports to the Midwest, Southeast and Southwest, and from the Gulf of Mexico to Canada. BNSF employs 38,000 people system wide, 294 in Mississippi, and in 2009 earned some \$14 billion in operating revenue.⁶

In Mississippi, BNSF operates 179 route miles cutting through the northeast corner of the state from Memphis to Birmingham via Tupelo with a branch from Amory to Columbus and trackage rights beyond Columbus. The single main track is capable of handling 286,000-lb. gross car weights and operations are governed by a Centralized Traffic Control system (CTC), whereby a dispatcher in a remote location controls trains through wayside signals. The route is included in the BNSF intermodal network and serves as a conduit for Powder River Basin coal to utilities in the Southeast along with building materials and intermodal traffic.

⁵ Class I railroads are those with operating revenues of \$378.8 million in 2009.

⁶ Material included in the discussion of each railroad obtained from websites of carriers and carrier organizations such as the Association of American Railroads and the American Short Line and Regional Railroad Association websites, from reports submitted to various governmental agencies such as the Surface Transportation Board (STB), and from studies and reports prepared for MDOT.

Table 4-1: Mississippi Rail System in 2009

Railroad	Reporting Marks	Mississippi Route Miles			
		Operated	Owned	Trackage Rights	Leased
Class I Railroads:		1842	1,666	229	1
BNSF Railway Company	BNSF	179	166	13	
CSX Transportation	CSXT	94	74	20	
Canadian National Railway	CN	752	577	175	
Kansas City Southern Railway Co.	KCS	606	640 ¹	19	1
Norfolk Southern Railway Co.	NS	211	209	2	
Local and Regional Railroads:		869	880	70	59
Alabama and Gulf Coast Railway	AGR	49	13	36	
Alabama Southern Railroad	ABS	6			6
Columbus and Greenville Railway	CAGY ²	96	162	27	
Gloster Southern Railroad Co.	GLSR ³	0	15		
Golden Triangle Railroad	GTRA	16	9	7	
Great River Railroad	GTR ⁴	0	32		
Grenada Railway, LLC	GRYR	187	187		
Kosciusko & Southwestern Railway	KSRY	21	21		
Luxapalila Valley Railroad, Inc	LXVR	10	10		
Meridian and Bigbee Railroad, LLC	MNBR	19	19		
Meridian Southern Railway, LLC	MDS	55	55		
Mississippi & Skuna Valley Railway	MSV	21	21		
Mississippi Central Railroad Co.	MSCI	48	48		
Mississippi Delta Railroad	MSDR	60	60		
Mississippi Export Railroad	MSE	42	42		
Mississippi Southern Railroad	MSR	28			28
Mississippi Tennessee Railroad, LLC	MTNR	27	27		
Mississippian Railway Cooperative, Inc	MSRW	22	22		
Natchez Railway, LLC	NTZR	66	66		
Old Augusta Railroad	OAR	3	3		
Port Bienville Railroad	PBVR	9	9		
R.J. Corman-Tennessee Terminal	RJCK	4			4
Redmont Railway Co.	RRC	36	36		
Tishomingo Railroad Company, Inc	TISH	11	11		
Vicksburg Southern Railway	VSOR	21			21
West Tennessee Railroad	WTNN	2	2		
Yellow Creek Port Railroad	YCRK	10	10		
TOTALS		2,711	2,546	308	60

¹ Includes Meridian Speedway, LLC.

² 93 miles out of service.

³ Railroad out of service.

⁴ Railroad out of service.

Note:

Class I railroad data obtained from Annual Reports to STB (R-1).

An average of 12 trains per day ran over the route in 2009, which generated between 30 and 60 million gross ton-miles per mile (MGTM) in 2008. The railroad has yards at Tupelo and Amory and interchanges traffic with five other carriers in Columbus, although its principal regional facility is located in Memphis.

4.2.2 Canadian National Railway

Canadian National (CN) is Canada's largest carrier traversing Canada from the Atlantic Ocean to the Pacific Ocean and is a major player in the United States rail market as well. CN added to its US holdings by acquiring a number of U.S. carriers including the Illinois Central Railroad, Wisconsin Central Railroad, Great Lakes Transportation, and the Elgin, Joliet and Eastern Railway, all of which operate under the CN U.S. subsidiary Grand Trunk Corporation. Acquisition of the Illinois Central extending south to the Gulf of Mexico resulted in a "Y" shaped network of 20,421 route miles connecting with Atlantic, Pacific and Gulf Coast ports. CN operating revenue in 2009 totaled \$6.5 billion, with 51 percent of its revenue (2007) comprised of U.S. domestic and cross-border traffic. Total U.S. and Canadian employment is 22,421.

Canadian National has the largest network presence in Mississippi, operating 752 miles 577 owned and 179 via trackage rights. The railroad's principal route extends southward from Memphis to Jackson (transporting 48 MGTM in 2008), with the main track route continuing almost due south to New Orleans (24.2 MGTM in 2008). The line is principally single track although there are short double track sections located at Jackson, Wanilla and McComb. The line is capable of handling car weights of 286,000 lbs., and operations are governed by a CTC system. Amtrak's *City of New Orleans* uses it between Memphis and New Orleans. A secondary main extends from Jackson through Hattiesburg *en route* to Mobile (11.3 MGTM in 2008).

In a little over two decades, the route mileage of the former Illinois Central Railroad (IC) in Mississippi has shrunk dramatically, from 2,485 miles in 1981 (76 percent of total state system) to 577 miles (23 percent) today. Much of the shrinking mileage was converted to short line and regional railroads. The acquisition of IC by Canadian National in 1998 strengthened the overall position of the remaining core routes in Mississippi. Two lines were spun off in 2009:

- The Brookhaven-Natchez line, used to serve local industries in the Natchez area and the Port of Natchez, and
- The secondary main track from Jackson to Memphis via Grenada (from Canton to Southaven actually transferred), which had been downgraded to local service only.

4.2.3 CSX Transportation

CSX Transportation (CSXT) operates the nation's third-largest rail network serving all major metropolitan areas east of the Mississippi River with extensions into the Canadian provinces of Ontario and Quebec. Geographic coverage is roughly comparable to that of the Norfolk

Southern, reflecting the rough geographic symmetry of the "Big Four" in today's North American railroad scene (BNSF and UP in the West; CSXT and NS in the East).

The 21,000-mile, 23-state, District of Columbia, and two-province CSXT network includes only 74 miles of track owned in Mississippi with another 20 miles operated via trackage rights. The railroad, however, serves the busy Gulfport-Biloxi-Pascagoula region and Mississippi's Gulf Coast ports *en route* to New Orleans and connections with western railroads. CSXT's single-tracked main, governed by a CTC system, also comprises a portion of the Gulf Coast High Speed Corridor between New Orleans and Mobile.

System-wide, operating revenue was \$8.2 billion in 2009 with 267,000 main-track generated carloads in Mississippi contributing to the total. In the same year, the carrier employed 50 people in the state.

4.2.4 Kansas City Southern Railway

Kansas City Southern Railway (KCS) is the smallest Class I carrier operating 3,726 miles in 10 states with 2009 operating revenue of \$860 million. KCS is a "NAFTA"⁷ railroad extending its operations to Mexico. KCS is one unit of a transportation holding company, Kansas City Southern, which also owns major interests in the Grupo TFM, operator of the premier rail route from Laredo, Texas to Mexico City, and the Texas Mexican Railway Company, owner of KCS's link to the border at Laredo. Combined, the three rail systems generate around \$1.2 billion in annual revenue.

KCS was founded in 1887 to provide the Midwest with direct access to the Gulf of Mexico, and this north-south trade emphasis continues today. The limited access to northern markets has been addressed with a series of formal marketing agreements. In Mississippi, KCS has haulage agreements between Jackson and Mobile, and operates via trackage rights over CN between Palmer and Hattiesburg, thus enabling KCS access to its north-south Palmer-Gulfport line.

KCS operates 606 miles of line in Mississippi, including the Meridian Speedway LLC (MSLLC) between Meridian, Jackson, Vicksburg, and Shreveport, Louisiana – nearly 20 percent of the entire KCS system. Of the miles operated, 19 are comprised of trackage rights and 1 is leased. In addition, the railroad owns 54 miles it does not operate, but which are operated by short line carriers. In all, the railroad owns 25 percent of the Mississippi rail system and thus is the largest railroad in the state based on ownership. The railroad's principal Mississippi line, the Meridian Speedway is single-tracked and capable of handling 286,000-lb. car weights. Improvements recently made to the MSLLC line are discussed later in this report.

⁷ North American Free Trade Agreement (NAFTA), signed by the US, Canada and Mexico.

KCS routes in Mississippi include:

- The east-west MSLLC.
- The north-south Jackson-Gulfport line with the Jackson-Palmer's Crossing portion of the route consisting of a haulage agreement with Canadian National. The Palmer's Crossing-Gulfport segment is a recent recipient of a TIGER grant to improve the line for faster operating speeds; raise the carload weight capability; and make certain safety improvements to prepare for traffic increases including double-stack containers.
- A north-south Corinth-Meridian route extending into Tennessee and passing through West Point. About one-half of this route is weight-restricted to 264,000-lb. maximum carloads.

Mississippi's only large-scale, carrier-owned, bulk-transload facility and intermodal facility⁸ are owned by KCS. Both are located in Richland on the outskirts of Jackson. Yards are located in Vicksburg, Jackson, and Meridian.

4.2.5 Norfolk Southern Railway

Norfolk Southern (NS) operates 21,000 route miles in 22 eastern states, the District of Columbia and the Province of Ontario. Its service network, which generated \$8 billion in railroad operating revenue in 2009, blankets the eastern United States, with principal western gateways at Chicago, St. Louis, Kansas City, Memphis, and New Orleans. The railroad's employment averaged 28,593 in 2009.

In the past several years, NS has expressed a willingness to explore new business models for capacity enhancements that include a public sector role. In Mississippi this includes the Crescent Corridor to run from New Orleans to the Northeast with six states joining NS in an application for TIGER grant funding, one of which was Mississippi.

Norfolk Southern has two principal routes in Mississippi with one cutting diagonally across the northeast corner of the state via Corinth (part of an NS main line running from Chattanooga to Memphis). The other route stretches from Meridian to Hattiesburg and Picayune *en route* to New Orleans from Birmingham and points north and east. Total Mississippi mileage operated is 211, including 2 miles of trackage rights. Both lines are single-tracked, with the exception of some double track through Meridian. Yards are located at Hattiesburg, Laurel, and Meridian.

Norfolk Southern routes in Mississippi are included in the development of freight and passenger corridor initiatives. Both lines are components of the Crescent Corridor, and the line through Corinth is the southern connection for the joint NS-CN MidAmerica Corridor. The Meridian-Hattiesburg-Picayune alignment is also designated as part of the Gulf Coast High Speed Rail

⁸ Handling trailers and containers on flatcars (TOFC/COFC).

Corridor, and currently hosts the daily Amtrak *Crescent* that operates between New York and New Orleans.

4.3 Local and Regional Railroads Serving Mississippi

The location of these smaller railroads is shown on **Figure 4-2**, and lengths are contained in Table 4-1. A brief description of each follows.

Alabama and Gulf Coast Railway (AGR) is one of 40 railroads located in 20 states and three Canadian provinces that are operated by RailAmerica, Inc., a holding company located in Jacksonville, Florida. It is one of the larger short lines located in the Southeast with 348 route miles owned or leased and with trackage rights extending from Amory to Mobile and Pensacola. It handles 61,000 annual carloads.

The railroad operates in Mississippi over 13 miles of track it owns between the Alabama-Mississippi state line and Columbus, and 36 miles of trackage rights over BNSF running from Columbus and Amory, the latter point being its principal BNSF interchange point. It interchanges with four other carriers at Columbus: KCS, CAGY, LXVR, and ABS. Carload weights on the line are limited to 263,000 lbs.

Alabama Southern Railroad (ABS) operates 85 route miles between Columbus and Brookwood, Alabama passing through Tuscaloosa. The line from Columbus to Tuscaloosa was leased from KCS in 2005 and is operated as one of the holding company Watco Companies, Inc.' rail carriers.

In Mississippi the railroad operates over some 6 miles of line between the Alabama state line and Columbus and has trackage rights over KCS between Columbus and Artesia. The railroad interchanges traffic with KCS in Artesia, CSXT in Brookwood, and NS in Tuscaloosa. The line is capable of handling 286,000 car weights.

The *Columbus and Greenville Railway (CAGY)* began operation in October, 1975, between Columbus and Greenville on 162 miles of track formerly owned by the Illinois Central Gulf Railroad (ICG), a predecessor of CN in Mississippi previously named the Illinois Central Railroad (IC)⁹. Continuous east-west operations were suspended in March, 2002, due to the line and bridge conditions, and 93 miles of the route between West Point and Greenwood remain out of service today.

⁹ The ICG was renamed again the IC, before becoming part of the CN system in 1998.

Most of the Columbus-West Point route is comprised of trackage rights over KCS. CAGY hopes to restore full east-west service over its property someday and so abandonment proceedings have not been initiated for the out-of-service segment. Currently most of its traffic is derived from the Greenwood-Greenville territory. The Port of Greenville is served by CAGY and is an ongoing source of rail traffic.

Canadian National Railway is CAGY's largest interchange connection, with all such traffic handled via Greenwood. Genesee and Wyoming, Inc., another railroad holding company, purchased the line from CAGY Industries in 2008. Carload weight limits are 263,000 lbs.

The Gloster Southern Railroad (GLSR) was formerly a wholly owned subsidiary of Georgia-Pacific (GP), operating between GP's plywood mill at Gloster, Mississippi and the CN interchange at Slaughter, Louisiana, 33 miles away. Fifteen of these miles are in Mississippi. The mill at Gloster closed in November 2002 but reopened in 2005 to serve the post-Katarina construction demand. The railroad is now controlled by V&S Railway, LLC, and the mill is once again closed.

Golden Triangle Railroad (GTRA) is a small switching carrier that supports the movement of forest products to and from Weyerhaeuser's Trinity pulp mill. Operations have been managed by a unit of Weyerhaeuser's Columbus mill.

The line is capable of handling 286,000-lb. carloadings, and it is an important transportation element of the mill's operation. The railroad has trackage rights over KCS to reach Columbus where it interchanges with six different carriers. It is currently in the process of being sold to Patriot Rail Corporation, yet another regional and short line railroad holding company.

The Grenada Railway, LLC (GRYR) runs from Southaven (just below the Tennessee-Mississippi state line at Memphis) to Canton northeast of Jackson, with a branch between W.V. and Bruce Junctions, the latter a connection point with MSRW. The railroad is approximately 187 miles long, and it connects with CN at both its northern and southern termini.

The rail line was formerly one of two Illinois Central Gulf main tracks between Memphis and Jackson. It was acquired from CN in 2009, although CN retained overhead operating rights on 175 miles. It is currently operated by V&S Railway.

Great River Railroad (GTR) runs 32 miles between Greenville and Rosedale and serves the Port of Rosedale. The Rosedale-Bolivar County Port Commission owns the railroad and has been trying to obtain funds to rehabilitate it and reinstate service. It has been embargoed since 2002.

Kosciusko and Southwestern Railway (KSRY), a former IC branch line, was acquired by the State of Mississippi in 1997 and is the only state-owned rail segment. Mississippi Rail Group, a private corporation, leases the line from the state with operations taking place under the

Kosciusko and Southwestern Railway name. Freight operations on the line have been minimal in recent years.

The Luxapalila Valley Railroad, LLC. (LXVR) is a subsidiary of Genesee and Wyoming, which also operates the Columbus and Greenville Railway. The majority of LXVR revenue is derived from Georgia-Pacific and Weyerhaeuser, 24 miles beyond the state line in Belk, Alabama. Ten miles are located in Mississippi. Traffic is brought into Columbus for interchange with six railroads.

Meridian and Bigbee Railroad (MNBR) is a 145-mile short line property that bridges the Alabama-Mississippi state line and provides direct connections with all major carriers serving the Southeast: KCS, NS, CSXT, and BNSF, as well as AGR.

The railroad runs from Meridian to Burkeville, Alabama, a distance of 147 miles, via Selma and has trackage rights over CSXT from Burkeville to Montgomery. MNBR has been held by Genesee and Wyoming since 2005.

MNBR depends heavily on on-line traffic but also serves as an east-west bridge carrier for traffic routed between the KCS and CSXT systems. It served as a detour route for CSXT post-Katrina. The line is capable of handling 286,000-lb. carload weights.

Meridian Southern Railway (MDS) acquired and commenced operating 55 miles of a former KCS branch line between Meridian and Waynesboro in 2000. The carload weight limit for the railroad is 263,000 lbs. resulting in large part from the condition of 72 bridges on the line. KCS is currently the railroad's only interchange partner, although it has received authority to access NS in Meridian using an 1,800-foot connecting track. It has received a state grant as funding. The railroad is one component of the East Mississippi Intermodal Rail Corridor project being considered by the Rail Authority of East Mississippi.

Mississippi and Skuna Valley Railroad (MSV) is a Weyerhaeuser-owned rail property that serves the company's lumber mill in Bruce. The 21-mile-long line is capable of handling 286,000-lb. car weights. The sole outlet for the line is via the Grenada Railway at Bruce Junction, near Coffeeville, 21 miles from the mill. The carrier is in the process of being acquired by Patriot Rail Corporation, a short line holding company.

Mississippi Central Railroad Company (MSCI) serves far north central Mississippi with a 51-mile operation (48 in Mississippi) from Oxford, connecting with BNSF at Holly Springs and with Norfolk Southern at Grand Junction, Tennessee, just 3 miles north of the state line. MSCI is owned by Pioneer-RailCorp of Peoria, Illinois. Carload weights are limited to 263,000 lbs.

Mississippi Delta Railroad (MSDR), in its current configuration, was created in March 2001 as Coahoma County assumed ownership of three contiguous light density rail lines extending north

from the CN interchange at Swan Lake. The combined lines total 60 miles and serve Clarksdale, Lula and Jonestown. Delta Oil Milling in Jonestown is the anchor shipper for the railroad. The lines are operated through a lease with C&J Railroad of Jeffersonville, Indiana and are limited to maximum gross carload weights of 263,000 lbs.

Mississippi Export Railroad (MSE) is a 42-mile carrier operating just west of the Alabama state line in southeast Mississippi between a connection with CN at Evanston south to Pascagoula where it connects and interchanges with CSXT and serves the Port of Pascagoula. It also interchanges with NS at Mobile and Hattiesburg and with KCS in Jackson via haulage agreements. MSE works closely with the Port of Pascagoula to develop new import and export opportunities. Access to the port is via a switch arrangement with CSXT. The entire railroad is capable of handling 286,000-lb. carloadings, and most of it can handle 315,000-lb. carloads. It delivers unit coal trains to Mississippi Power's Plant Daniel just north of Pascagoula.

Mississippi Southern Railroad (MSR) runs from a junction with KCS at Newton to its terminal at Bay Springs, 28 miles away. It is leased by Watco Companies from, and interchanges with, KCS. Carload weight limits are 263,000 lbs., although some of the line is capable of handling 286,000 lb. carloads.

Mississippi Tennessee Railroad (MTNR) is a 27-mile operation that runs from connections with BNSF and KCS at New Albany to Falkner. MTNR is owned and operated by Iron Horse Resources, Inc. of Oak Island, Illinois, which bought the line from North American Railnet in May 2003.

The Mississippian Railway Cooperative (MSRW), or "Mississippian", operates a single 22-mile alignment northeastward from a BNSF connection in Amory to Fulton. It was purchased by the Itawamba Development Authority in 1986 to preserve service to local rail-served industries. Rail customers and the Development Authority (MDA) banded together to raise public and private funds for the line's purchase and then turned day-to-day governance over to a shipper-appointed board. On-line Homan Industries now operates the railroad, which is rated for 263,000-lb. maximum carload weight limits.

Natchez Railway, LLC (NTZR) was created in 2009 through the acquisition of CN's branch from Brookhaven to Natchez. The 66-mile railroad, connecting with CN at Brookhaven, is affiliated with V&S Railway. It also serves the Port of Natchez.

Old Augusta Railroad (OAR) is a wholly owned subsidiary of Leaf River Forest Products, which is in turn owned by Georgia-Pacific. It serves both a GP wood mill and paper facility. As a single-industry spur serving Leaf River from the CN (former IC) interchange at Augusta, the property was first defined as a common carrier upon its construction in 1983. The line runs 2.4 miles from the CN interchange and is capable of handling 286,000-lb. carloads.

The *Port Bienville Railroad (PBVR)*, 9 miles long, was established by Hancock County to serve the Port Bienville industrial park. Volumes have grown in recent years and trackage is now capable of handling 286,000-lb. carload weights. Car cleaning, repair, maintenance and storage services are also offered to rail customers. As an arm of the Hancock County Development Commission, PBVR is anxious to attract new clients and industries to the area. A new multimodal transload facility is located within the designated Foreign Trade Zone in the Port Bienville industrial park.

PBVR is capable of handling container traffic but has not done so to any significant degree, because CSXT prefers to receive containers via truck at its New Orleans intermodal terminal. Connecting service to and from PBVR is via CSXT at Ansley. A proposal to connect the rail carrier to Norfolk Southern is under study.

R.J. Corman-Tennessee Terminal (RJCK) is four miles long running east from a junction, and interchange, with BNSF at Olive Branch. The line was leased from BNSF in 2006 and operated as RJCK along with switching operations in Memphis. Line owner R.J. Corman Railroad Group is a provider of many forms of rail services and a short line railroad holding company.

Redmont Railroad Company (RRC) was created from a line sold to the Southern Railway in 1986 and became an independent short line operating under the RRC name in 1995. It is now owned by the Mississippi-Alabama Railroad Authority and is leased to RRC, a subsidiary of Sunshine Mills of Red Bay, Alabama, just over the state line. The entire line is 36 miles long operating from the mill to and from a NS connection in Corinth.

The Tishomingo Railroad (TISH) is an 11-mile line constructed originally to serve a Tennessee Valley Authority nuclear power plant in northeast Mississippi. The project was abandoned in the early 1980s and the parcel deeded to the State of Mississippi in 1996. Since that time, it has been a tool of the Mississippi Development Authority to attract new employees to the region. In 1989, privately held Tishomingo Railroad became the operator-lessee for rail service to and from the site, now called the Tri-State Commerce Center. The Tri-State Commerce Center was sold to Tishomingo County in 2003. Pioneer-RailCorp now leases the railroad and provides rail service through its Mississippi Central Railroad. Traffic is interchanged with Norfolk Southern at Iuka.

Vicksburg Southern Railroad (VSOR) is another Watco Companies affiliate operating over 21 miles of track in the Vicksburg area, including the Port of Vicksburg and north to Redwood. The rail lines were leased in 2006 from KCS with whom the carrier interchanges in Vicksburg. Carload weights are limited to 263,000 lbs.

West Tennessee Railroad (WTNN) operates a collection of former Illinois Central and Norfolk Southern branch lines. Extending southward from Fulton, Kentucky through the Jackson,

Tennessee area and into the far northeastern corner of Mississippi, the railroad connects and interchanges with KCS and NS at Corinth. Two miles of the carrier lie in Mississippi.

WTNN does not directly serve any Mississippi rail users, but forwarded interchange volumes do impact Mississippi. The railroad is a component of the NS-CN Mid-America Corridor, which will increase rail traffic, including Midwest coal in Mississippi.

Yellow Creek Port Railroad (YCRK) is controlled by the Yellow Creek Inland Port Authority over which service is provided by KCS. The railroad runs 10 miles from Sharp, Mississippi, on the KCS line from Corinth, to Counce, Tennessee, to Yellow Creek Port where it terminates.

4.4 Local and Regional Railroad Holding Companies

While there are multiple short line and regional railroads operating in Mississippi, 14 of the 27 are held in portfolios of railroad holding companies that control multiple numbers of similar carriers. Two additional local railroads, now privately owned, are involved in negotiations for sale to one of the holding companies. Assuming the transactions are consummated, holding companies identified in the following descriptions will control two-thirds (69 percent) of the state's local and regional railroads.

4.4.1 Genesee and Wyoming, Inc.

Headquartered in Greenwich, Connecticut, Genesee and Wyoming operates 62 local and regional railroads in four countries and additionally provides switching and transloading services in numerous locations. The route mileage of the properties total 6,000 and another 3,400 are accessible through various agreements. Three of the companies operate in Mississippi – the Columbus and Greenville Railway, the Luxapalila Railroad, and the Meridian and Bigbee Railroad with a total in-state mileage of 191.

4.4.2 Ironhorse Resources, Inc.

Ironhorse Resources operates five railroads in three states in addition to managing transloading and trucking operations from O'Fallon, Illinois. One of the railroads is located in Mississippi, namely the 27 miles long Mississippi Tennessee Railroad.

4.4.3 Patriot Rail Corporation

Patriot Rail of Boca Raton, Florida, owns six short line carriers that operate in eight states. It is in discussions to operate another seven, two of which are located in Mississippi – GTRA and MSV, currently owned and operated by Weyerhaeuser. The two lines together are 30 miles long.

4.4.4 Pioneer-RailCorp

Seventeen wholly owned railroad subsidiaries, over 600 miles long in combination, are operated by this Iowa corporation providing rail services in 13 states. One of the subsidiaries is located in Mississippi, MSCI. It also leases and operates the TISH for a total Mississippi mileage of 59.

4.4.5 RailAmerica, Inc.

The Jacksonville, Florida headquartered company owns 40 affiliated short line and regional railroads with 7,500 route miles in 27 states and three Canadian provinces. In 2008, the holding company's 1,800 customers generated over a million carloads of traffic. However, only one of its railroads operates in Mississippi, AGR. This short line has only 13 miles in Mississippi before crossing into Alabama.

4.4.6 R.J. Corman Railroad Group

This company provides a variety of rail-related services including construction and maintenance of track, derailment clean-up, and material sales, among others, in addition to short line operations. The Nicholasville, Kentucky company's presence in Mississippi results from a switching operation agreement with BNSF over its trackage in the Memphis metropolitan area that includes four miles in Mississippi.

4.4.7 V&S Railway, LLC

The Salt Lake City, Utah based V&S Railway owns and operates three railroads in Kansas and Colorado and four affiliated carriers, three of which operate 268 miles in Mississippi – GLSR, GRYR and NTZR. The latter two were sold to non-carrier affiliates of V&S Railway and A&K Railroad Materials by CN in 2009. V&S is also affiliated with A&K Railcar Storage.

4.4.8 Watco Companies, Inc.

Watco provides a variety of rail services including industrial switching, warehousing, and transloading, as well as operating 22 railroads in 18 states. Three of the short lines operated by the Pittsburg, Kansas company are located in Mississippi, all over trackage leased from KCS. The three, ABS, MSR, and VSOR, operate over 55 miles in Mississippi.

4.5 Railroad Needs

The state's rail carriers were surveyed as part of the outreach effort for the Mississippi State Rail Plan, as discussed in Section 2. Among other things, a statement of needs and estimated costs was requested. As could be expected, replies ranged from no response to detailed needs descriptions and cost estimates. Some responses contained only general statements such as "better access to ...", but without a description of how "better access" could be accomplished or what comprised "better." Needs statements where the solution is not readily apparent will require planning and/or engineering assessments to determine how to satisfy the need. Other need responses were more specific but lacked cost estimates.

4.5.1 Operating Capacity and Bottlenecks

Capacity issues were identified from a national capacity assessment of the country's principal routes and survey responses. They are discussed in the following paragraphs by category.

4.5.1.1 Association of American Railroads

A September 2007 study of rail capacity on a national basis was performed by the Association of American Railroads (AAR). It was prepared with member involvement and a steering committee that included representatives of three of Mississippi's Class I railroads – BNSF, CSXT, and NS¹⁰. This assessment of long-term capacity needs of the rail industry requested by the National Surface Transportation Policy and Revenue Study Commission was based on satisfying the U.S. DOT's projected rail freight demand for 2035. Estimates at that time projected an increase in demand of 88 percent (tonnage) by that date.¹¹

The study rail system comprised 52,340 route miles of primary rail freight corridors, approximately one-third of the total U.S. rail system. The rail lines included in Mississippi were comprised of:

- The NS main line between Birmingham and New Orleans passing through Meridian and Hattiesburg;
- The NS main line between Chattanooga and Memphis passing through Corinth;
- The BNSF track between Memphis and Birmingham passing through Tupelo;
- The CN-Memphis-New Orleans main line passing through Jackson;
- The Meridian Speedway also passing through Jackson; and,
- The CSXT Gulf Coast main line passing through Pascagoula and Gulfport.

The designated Mississippi Primary Rail-Freight Corridors are comprised of Class I routes as shown in **Figure 4-3**.

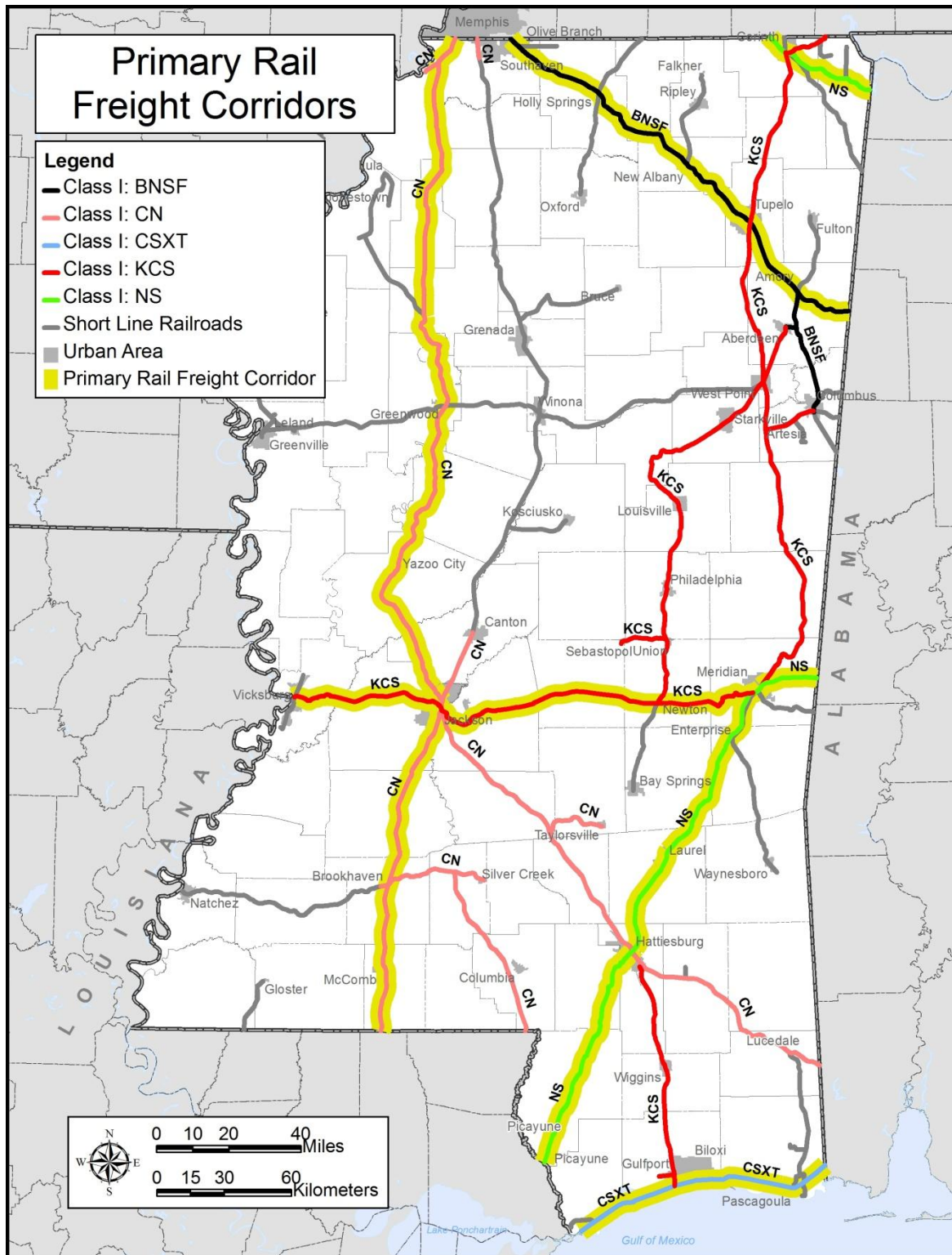
While existing capacity assessments included existing passenger service, future needs were based on additional freight demand without consideration of new passenger service needs. Existing levels of rail traffic were assigned to the study system using data from the STB's Carload Waybill Sample and line capacity estimated using track, signal and freight traffic/train type characteristics. Traffic volumes and the capacity of each segment of the rail system were compared and volume-to-capacity ratios developed and level of service ratings established.

Of the Mississippi designated corridors, the NS route through Corinth and the Meridian Speedway were projected to have capacity issues in the future with existing infrastructure, but when compared to planned improvements, both lines are projected to have acceptable volume to capacity conditions.

¹⁰ With assistance from Cambridge Systematics.

¹¹ The 88 percent growth in tonnage is restated as 23 percent for the same time period in the FRA's *National Rail Plan – Moving Forward*, September 2010, p. 16.

Figure 4-3: Mississippi Primary Rail-Freight Corridors



4.5.1.2 Corridor Initiatives

Improvements to the two line segments identified above are being approached through two corridor initiatives. Both the NS main track between Birmingham and New Orleans passing through Meridian and Hattiesburg, as well as the Sheffield-Memphis line passing through Corinth are included in the railroad's Crescent Corridor Initiative, and the Meridian Speedway has been subject to an improvement program since the establishment of the Meridian Speedway (MSLLC) in 2006.¹²

On March 10, 2010, NS reported at the J.P. Morgan Transportation Conference that expenditures as initially identified were 95 percent complete, and an April 1, 2010 item in *Railway Track and Structures*¹³ itemized some of the improvements:

- Installation of Centralized Traffic Control (CTC) on 250 miles of the 320-mile long corridor.
- Construction of new sidings, extension of others, and new second track in places.
- Bridges rebuilt.
- Track improvements, including 100 miles of rail replacement, 281,000 ties replaced, undercutting, ballasting, and surfacing of 240 miles.
- Crossing upgrades, some in association with MDOT.

The switch tender crossing of the KCS (MSLLC) and the CN in Jackson is an operating bottleneck that needs to be addressed in the Speedway Corridor. Crossing conflicts will only worsen as MSLLC volumes continue to grow.

4.5.1.3 Columbus Interchange

Six different railroads, one Class I and five local or regional corridors meet and interchange traffic in Columbus. In this case, additional yard capacity for interchange purposes was identified as a need.

4.5.2 Infrastructure Upgrades

Most track upgrades are needed for the branch line and local and regional system, although some, especially falling into the safety category, pertain to Class Is.

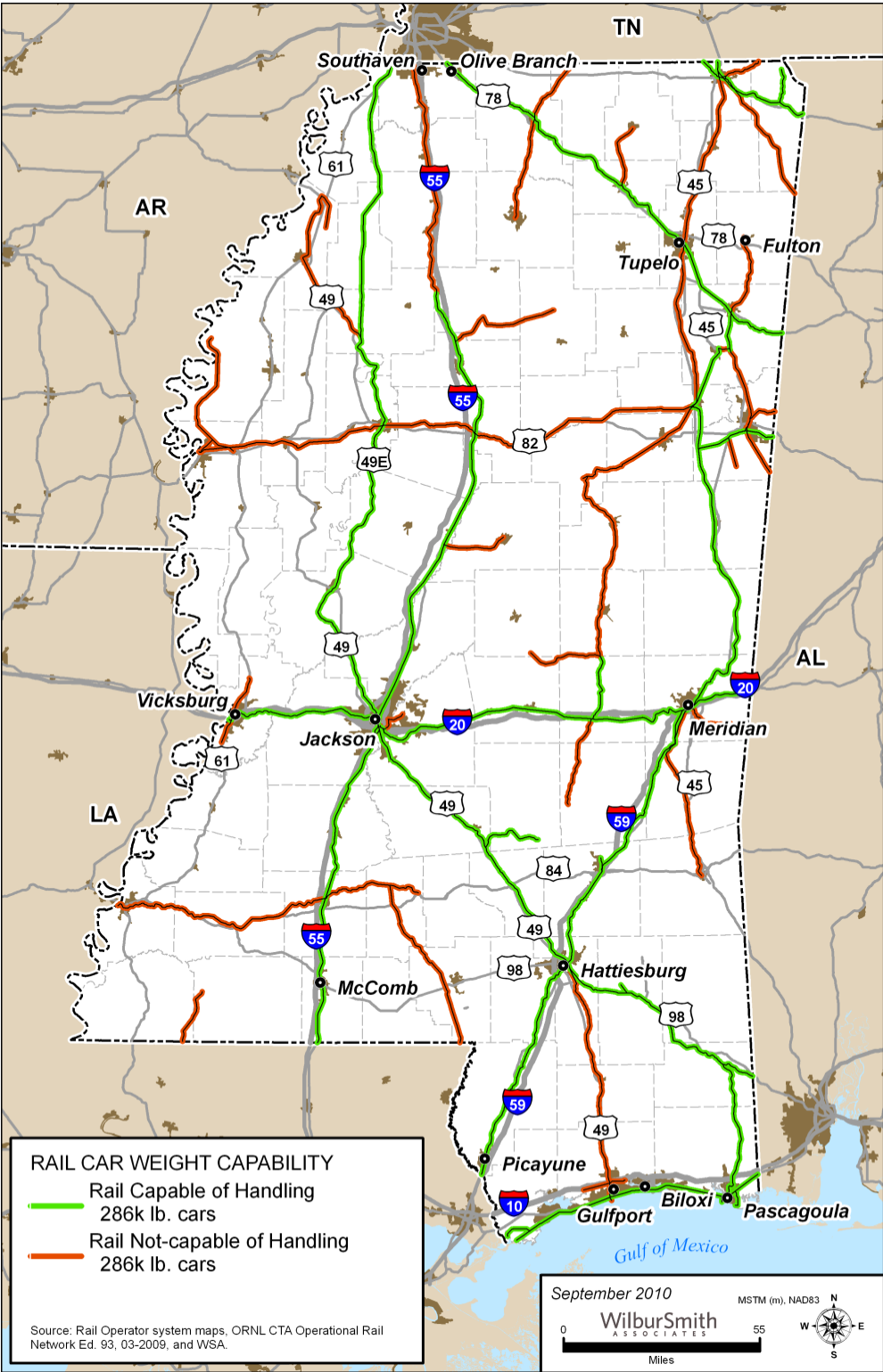
4.5.2.1 Track Upgrades

Track upgrades to create the ability to transport 286,000-lb. carloads, restore service or improve operating speeds and reliability comprised the largest component of the estimated needs category. Rail lines lacking 286,000-lb. carload weight capacity are the subject of **Figure 4-4**.

¹² See WP 18: Rail Traffic Flows for additional discussion of all corridor initiatives.

¹³ Page 8.

Figure 4-4: Rail Car Weight Capability



4.5.2.2 Safety

Several grade separations and crossing improvements were also identified. These needs should be coordinated with MDOT's grade-crossing program.

4.5.2.3 Other

Needs falling into this category consist of construction of trackage or restoration of abandoned lines to facilitate access to various facilities or locations. One would restore a former through route crossing the Mississippi River using a carfloat.

4.5.2.4 Cost Development

Survey responses with estimated costs were used as supplied. In order to generate an indication of the magnitude of overall rail physical and funding needs including non-responding railroads, a goal was adopted that the entire state rail system be capable of transporting 286,000-lb. carloads. The cost estimates submitted to meet similar needs were averaged along with others contained in TIGER grant applications and a unit cost developed for application in the no-reply and estimate-lacking cases. The unit cost thus derived is much higher than required for tie replacements, which have been a typical need, especially on light density lines, in years past. Most of the estimated costs reflect larger rail sections and strengthened structures (trestles, bridges) required for today's heavier carload weights; therefore in some cases, more than average requirements for either would result in significant cost differences. Thus, estimates made in this manner will require thorough assessments due to the differences in each line segment's composition and condition.

No attempt was made to estimate costs for stated needs when clear means to satisfy the need were not provided nor were obvious. These cases were simply designated as to be determined (TBD).

4.5.3 Needs Summary

Short term rail projects noted in this Rail Plan pertain to grant awards made from the Multimodal Transportation Improvement Program to public railroads in State Fiscal Years 2010 and 2011. These totaled to \$1.2 million in each year or \$2.4 million for the program for the two years. These projects, mostly pertained to track and bridge improvements, are cited in **Appendix C**. The program itself is discussed in Section 13.

For the longer term, track and structure upgrades are designated for 817 miles of rail line on 19 different rail carriers. Four railroads identified rail and highway safety improvements (including grade separations), and five responses included operating and capacity improvements. The needs and costs by category are shown in **Table 4-2**. Needs identified but falling into the TBD category are not included in the summary above or Table 4-2.

Table 4-2: Railroad Needs

Item	Estimated Costs (\$ millions)
Track and Structure Upgrades	\$355.45 ⁽¹⁾
Rail – Highway Safety Projects	36.90
Operating and Capacity Improvements	182.10
Total	\$561.45

⁽¹⁾ \$46.9 million also included in Port rail needs

In order to compare the needs tabulated above with needs of other modes, they are restated in **Table 4-3**. For railroad needs, the preservation category includes projects to preserve or restore rail service. Modernization needs are those that upgrade track and structures to today's standards such as 286,000-lb. carload weight capability and safety improvements. Expansion needs are those intended to improve operations and/or capacity.

Table 4-3: Railroad Needs Restated

Item	Estimated Cost (\$ millions)
Preservation	\$116.20
Modernization	293.15 ⁽¹⁾
Expansion	152.10
Total	\$561.45

⁽¹⁾ \$46.9 million also included in Port rail needs

The specific projects with costs totaling to \$561.45 million are itemized in **Appendix D**.

5. PASSENGER RAIL SYSTEM EVALUATION

5.1 Background

Current rail passenger service in Mississippi is provided by two traditional long-distance trains operated by the National Railroad Passenger Corporation (Amtrak). There is also one tourist railroad in the state. Amtrak assumed operations of most of the nation's rail passenger trains in 1971 due to financial losses sustained by the freight railroads (especially the Penn Central Railroad) on their passenger operations. The National Railroad Passenger Corporation is a congressionally chartered corporation owned by the U.S. Department of Transportation and operated as a quasi-nonprofit corporation. The Southern Railway did not join Amtrak until 1979.

5.1.1 Pre-Amtrak Passenger Services

Prior to Amtrak's assumption of intercity passenger rail service (May 1, 1971), three railroads – the Illinois Central Railroad (now Canadian National Railway), Southern Railway (now Norfolk Southern Railway) and Louisville & Nashville Railroad (now CSX Corporation) – provided long-distance rail service on routes serving the State of Mississippi.

The Southern Railway operated one tri-weekly round-trip frequency (daily Atlanta – New York), the *Southern Crescent*, linking New York and New Orleans via Meridian and Hattiesburg. Amtrak assumed operation of the train in January 1979 increasing the frequency of the service to daily on the Atlanta to New Orleans segment of the route.

Serving the Mississippi's central corridor, the Illinois Central Railroad operated two daily round-trip frequencies, the *City of New Orleans* and *Panama Limited*, linking Chicago and New Orleans via Grenada and Jackson. When Amtrak assumed operations the frequency of rail service was reduced to one daily round-trip.

Serving the Gulf Coast was the Louisville & Nashville Railroad, which offered two daily frequencies between New Orleans and Flomaton, AL. Two railroads, Seaboard Coast Line and Louisville & Nashville Railroad, jointly operated an overnight New Orleans to Jacksonville train named the *Gulf Wind*. The L&N also operated the *Pan American* along the Gulf Coast traveling between New Orleans and Cincinnati, Ohio. On certain days and during certain schedule periods the trains were combined at Flomaton. Amtrak's original route network, developed by the U.S. Department of Transportation, did not include rail service on the Gulf Coast route.

5.2 Current Amtrak Services

As was noted above, intercity passenger rail service in Mississippi is currently provided by Amtrak. Existing service includes two long distance trains: the *Crescent* and the *City of New Orleans*. Until 2005 a third train, the *Sunset Limited*, also served Mississippi along the Gulf Coast route. Amtrak is looking at three options for potential restoration of that service.

5.2.1 Crescent Service

The *Crescent* operates between New York and New Orleans. The service consists of one daily round-trip, stopping at Picayune, Hattiesburg, Laurel, and Meridian within Mississippi. Intermediate stops outside Mississippi include Birmingham, AL, Atlanta, GA, Charlotte, NC, Washington, DC, Baltimore, MD, Philadelphia, PA, and Newark, NJ. Southbound the train leaves New York 2:15 PM and arrives in New Orleans 7:38 PM the following day. Northbound the train leaves New Orleans at 7:05 AM and reaches New York at 2:04 PM the following day. The *Crescent's* schedule offers daytime service through Mississippi in both directions with stops in the afternoon (southbound) from 3:11 PM (Meridian), 4:44 PM (Hattiesburg) to 5:48 PM (Picayune). The *Crescent* travels northbound in the morning with stops from 8:27 AM (Picayune), 9:35 AM (Hattiesburg) to 11:07 AM (Meridian). The distances between some of the major cities along this route are as follows:

Table 5-1: Route Segments of the *Crescent*

New York - Washington DC	225 miles
Washington DC - Charlotte	376 miles
Charlotte - Atlanta	258 miles
Atlanta - New Orleans	518 miles
Total:	1,377 miles (162 miles within Mississippi)

A map of the *Crescent* route is shown in **Figure 5-1**. Through Mississippi, the *Crescent* runs on track owned by the Norfolk Southern Railway.

Based on FY 2009 Amtrak ridership reports, about 15 percent of Mississippi riders on the *Crescent* are traveling locally (in both directions) between stations in Mississippi. Another 24 percent of the Mississippi riders are traveling (in both directions) between stations in Mississippi and New Orleans or Slidell, LA. Riders traveling from either Meridian or Hattiesburg to New Orleans (in both directions) account for two-thirds of this segment. The majority of Magnolia State riders (61 percent) are traveling (in both directions) from Mississippi to stations north and east of Mississippi. Over 50 percent of these riders are traveling (in both directions) from either Hattiesburg or Meridian to Birmingham, Atlanta, Washington and New York.

Figure 5-1: Crescent Route



Source: Amtrak

Based on the 2010 Amtrak Ridership Profile for the *Crescent*, passengers are mostly taking leisure trips (79 percent). The majority of these trips (54 percent) are for visiting family or friends, while vacation or other recreational trips account for the remainder in this category. Of

the remaining riders, 9 percent are traveling for personal business while 11 percent are making business trips. The majority of riders are female (71 percent) with an average age of 58 years. Household income averages \$76,000 per year (2010). Almost half of all travelers are employed, but large segments (41 percent) are retired.

5.2.2 City of New Orleans Service

The *City of New Orleans* operates between Chicago and New Orleans. The service consists of one daily round-trip, stopping at Greenwood, Yazoo City, Jackson, Hazlehurst, Brookhaven, and McComb within Mississippi. Intermediate stops outside Mississippi include Champaign-Urbana, IL, Carbondale, IL, (with connecting Thruway bus service to St. Louis), Fulton, KY, and Memphis, TN. Southbound the train leaves Chicago 8:00 PM and arrives in New Orleans 3:32 PM the following day. Northbound the train leaves New Orleans at 1:45 PM and reaches Chicago at 9:00 AM the following day. The *City of New Orleans* schedule offers daytime service in both directions through Mississippi with stops in the late morning and early afternoon (southbound) from 9:00 AM (Greenwood), 11:20 AM (Jackson) to 12:40 PM (McComb). Northbound the *City of New Orleans* travels through Mississippi in the late afternoon and early evening with stops from 3:32 PM (McComb), 5:44 PM (Jackson), to 7:37 PM (Greenwood). The distances between some of the major cities along this route are as follows:

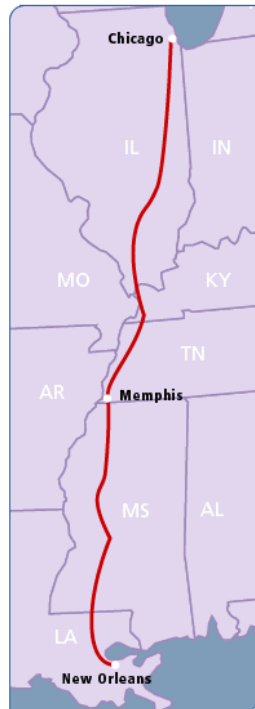
Table 5-2: Route Segments of the *City of New Orleans*

Chicago - Champaign - Urbana	129 miles
Champaign - Urbana - Memphis	391 miles
Memphis - Jackson	223 miles
Jackson - New Orleans	183 miles
Total:	926 miles (292 miles within Mississippi)

A map of the *City of New Orleans* route is shown in **Figure 5-2**. Through Mississippi, the *City of New Orleans* runs on track owned by the Canadian National Railway.

Based on FY 2009 Amtrak ridership reports, about 6 percent of Mississippi riders on the *City of New Orleans* are traveling locally (in both directions) between stations in Mississippi. Another 34 percent of the Mississippi riders are traveling (in both directions) between stations in Mississippi and New Orleans or Hammond, LA. Riders traveling between Jackson and New Orleans (in both directions) account for 69 percent of this segment. The majority of Magnolia State riders (60 percent) are traveling (in both directions) between Mississippi and stations north of Mississippi. Travel to the Chicago area dominates this travel segment accounting for 81 percent of these riders (in both directions). Another 6 percent of the northbound riders are traveling (in both directions) between the cities of Jackson and Memphis.

Figure 5-2: City of New Orleans Route



Source: Amtrak

Based on the 2010 Amtrak Ridership Profile for the *City of New Orleans*, passengers are mostly taking leisure trips (74 percent). A large portion of these trips (44 percent) are for visiting family or friends, while vacation and other recreational trips account for the remainder in this category. Of the remaining riders, 11 percent are traveling for personal business while 12 percent are making business trips. The majority of riders are female (67 percent) with an average age of 56 years. Household income averages \$70,000 per year (2010). In all, 45 percent of all travelers are employed, but large segments (40 percent) are retired.

5.3 Restoration of Gulf Coast Service

Over the years since the discontinuance of rail service between New Orleans, the Mississippi Gulf Coast, Mobile, AL and Jacksonville, FL in 1971, there have been efforts to restore the service, as follows.

5.3.1 Louisiana World Exposition, 1984-1985

In 1982 the Louisiana-Mississippi-Alabama Rapid Rail Transit Commission adopted a resolution authorizing its chairman to seek funding to study the feasibility of rail service on several routes including one from New Orleans to Mobile. Ridership estimates were developed for this route and required capital improvements identified. The service would operate in conjunction with the Louisiana World Exposition. The World Exposition was scheduled to take place in New Orleans from May 12 through November 11, 1984. Based on the study it was decided to move forward and institute rail service between Mobile, the Mississippi Gulf Coast and New Orleans. The service, a 403b shared subsidy agreement with Amtrak, began April 29, 1984.

The 1984 *Gulf Coast Limited* departed Mobile at 7:00 AM arriving New Orleans at 10:40 AM. It left New Orleans at 6:30 PM and arrived back in Mobile at 10:05 PM. Intermediate stops were East New Orleans, Waveland/Bay St. Louis, Gulfport, Biloxi, and Pascagoula. The schedule allowed a full day in New Orleans and was similar to Louisville & Nashville's old *Gulf Wind* schedule. Ridership was generally strong and a positive funding balance enabled the train to continue operations beyond the end of the exposition. The rail service was discontinued on January 6, 1985.

5.3.2 Sunset Limited, 1993-2005

After the Gulf Coast Limited's termination, efforts continued to initiate rail service along the Gulf Coast. These efforts bore fruit in April of 1993 when Amtrak's *Sunset Limited* was made a transcontinental route extending from New Orleans to Miami, FL. It operated three times a week in each direction. *Sunset Limited* stations in Mississippi included Bay St. Louis, Gulfport, Biloxi, and Pascagoula. The eastern terminus of the train later shifted to Orlando, FL.

5.3.3 Gulf Coast Limited, 1996-97

In an effort to capitalize on the new gambling venues along the Mississippi Gulf Coast and given the *Sunset Limited*'s tri-weekly schedule, the Southern Rapid Rail Transit Commission, which has since been renamed the Southern High-Speed Rail Commission, continued to seek additional rail service along the Gulf Coast. After much discussion Amtrak agreed to a 90-day experiment using layover equipment from the *City of New Orleans*. Service began on June 27, 1996. The train was once again named the *Gulf Coast Limited*, and its schedule was similar to the one in 1984 – early morning westbound from Mobile to New Orleans and evening eastbound from New Orleans to Mobile. Intermediate stops were at Bay St. Louis, Gulfport, Biloxi and Pascagoula. Service was successful and lasted beyond the 90-day period until March 31, 1997 when funding issues resulted in its discontinuance. Thus for almost a year there were multiple frequencies on the Mobile, Mississippi Gulf Coast, New Orleans route.

5.3.4 Post Katrina

Amtrak's *Sunset Limited* continued to provide intercity passenger rail service along the Gulf Coast of Mississippi until Hurricane Katrina in August 2005. The destruction caused by the hurricane along the Gulf Coast forced Amtrak to suspend the service east of New Orleans. The service remains suspended today. A map of the existing *Sunset Limited* route appears in **Figure 5-3**. The route is on the Union Pacific Railroad.

Figure 5-3: Sunset Limited Route



Source: Amtrak

In July 2009, Amtrak issued its *Gulf Coast Service Plan Report*. That report delineated three options for restoring the service. Option 1 would be restoration of the thrice weekly service between Los Angeles and Orlando. Option 2 would be an extension of the daily Chicago-New

Orleans *City of New Orleans* service to Orlando. Option 3 would be a stand-alone daily service between New Orleans and Orlando.

Capital and mobilization costs for the options ranged between \$32.7 million for Option 1 and from \$57.6 million to \$96.6 million for Options 2 and 3. The cost range for Options 2 and 3 are driven by different assumptions of equipment acquisition. All options include \$10.7 million for restoration of the 13 suspended service stations, \$20 million for installation of Positive Train Control along the route, and lesser mechanical and qualifying costs.

Potential public benefits of service restoration could include the positive impacts of investments to restore the service and facilities, creation of 32 to 122 Amtrak permanent jobs, mobility enhancement for residents along the Gulf Coast, and energy savings to the degree that trips are diverted from cars and airplanes, generally regarded as less energy-efficient modes.

5.4 Ridership and Financial Performance

National intercity rail passenger ridership and revenues reached their highest levels in Amtrak history in FY 2008 with nearly 29 million passengers carried and \$1.73 billion in ticket revenues. Ridership in Mississippi in FY 2008 totaled just over 100,000 riders (**Figure 5-4**). Despite the recession Amtrak ridership in Mississippi continued upward in FY 2009 with ridership increasing eight percent to over 108,000 riders. Growth trends in FY10 remain positive as a result of consistent and improved on-time performance, a “modestly” recovering economy, high gasoline and airline prices compared to FY09, and a focus on improved customer service delivery.

5.4.1 Annual Trends

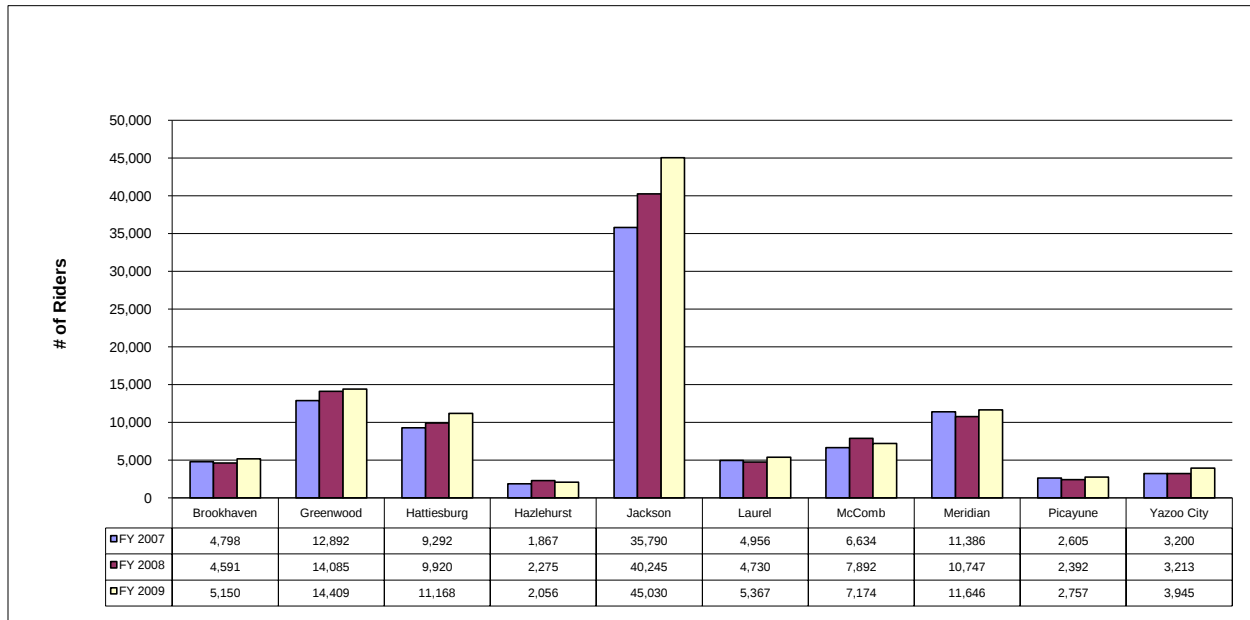
As was noted above, total Mississippi Amtrak ridership for FY 2009 increased eight percent from FY 2008. With the exception of the Hazlehurst and McComb stations, all locations across the State have seen an increase in ridership, with the largest increase in Jackson, where almost 5,000 more boardings were reported. The following chart shows the average number of boardings and alightings at each station in Mississippi for FY 2007 through FY 2009.

5.4.2 Financial Performance

Amtrak’s October-December 2009 revenue and operating costs reveal that the *City of New Orleans*’ revenue covered 45.5 percent of its operating costs. This ratio is commonly known as the fare box recovery ratio. The figure for the *Crescent* was somewhat lower at 40.2 percent.

For the same period in FY 2008, the *City of New Orleans* achieved a 45.8 percent fare box recovery, and the *Crescent* achieved 44.9 percent.

Figure 5-4: Amtrak Riders in Mississippi from FY 2007 to 2009



Source: Amtrak

Mississippi's two rail passenger services' fare box recovery rate range of 40 percent to 45 percent for the October – December 2009 time period was similar to that of the Amtrak average 45 percent fare box recovery for all long distance services.

5.5 On-Time Performance

Amtrak defines On-Time Performance (OTP) as the total number of trains arriving on-time at a station divided by the total number of trains operated on that route. A train is considered on-time if it arrives at the final destination within an allowed number of minutes, or tolerance, of its scheduled arrival time. Trains are allowed a certain tolerance based on how far they travel.

5.5.1 OTP Annual Trend

The overall OTP for all Amtrak routes in FY 2008 was 71 percent. The *Crescent* has averaged 72.8 percent OTP in the 12 months prior to February 2010, while the *City of New Orleans* has averaged 83.1 percent OTP for the same period. A consistent and high on-time performance makes the rail service more attractive to riders, especially those traveling shorter distances (i.e. intrastate journeys within Mississippi, or journeys between Mississippi and New Orleans, Birmingham, or Memphis)

5.5.2 Cause of OTP Delays

Causes for Amtrak train delays can be attributed to a number of reasons including the host railroad, Amtrak itself, or other delays such as grade crossing collisions. **Table 5-3** shows the top three causes of delay in percent of delay minutes for routes through Mississippi in January 2010.

Table 5-3: Amtrak Causes of Delay to Trains in Mississippi, January, 2010

Cause of Delay	Route	
	<i>Crescent</i>	<i>City of New Orleans</i>
Train Interference	24.4 %	56.1 %
Track and Signals	21.9 %	19.2 %
Operational	17.2 %	13.5 %
All Other Delays	36.5 %	11.2 %

Source: Amtrak

Train interference delays are related to other train movements in the area. These can be freight trains as well as other Amtrak trains.

Track and signals delays are related to the railroad infrastructure and/or maintenance work being done on the tracks or signaling systems. Included are delays from reduced speeds to allow safe operation due to the track problems.

Operational delays are related to equipment turning and serving, crewing, and detours.

All other delays could include delays caused by the weather, assisting passengers, and non-railroad third party factors such as customs and immigration (not relevant to Mississippi services), a bridge opening for waterway traffic, police activity, grade crossing accidents or loss of power due to a utility company failure.

5.6 Stations

As well as being gateways to trains, rail stations are a focus for activity. They foster economic development, commercial endeavors, tourism, cultural activities, civic pride and historic preservation. There are 10 active Amtrak stations in Mississippi. Three of these stations – Jackson, Meridian and Hattiesburg – have been cited as prime examples of how investment in rail stations can foster a revised outlook for downtowns and generate additional private investment. In addition, McComb’s renovated station and museum highlights the importance of the railroads, while Picayune’s newly rebuilt station improves service for those boarding the *Crescent*. Brookhaven is presently restoring and transforming its station into a new multimodal transportation center.

Of the 10 Mississippi stations, six are served by the *City of New Orleans*, and four by the *Crescent*. All stations see two trains a day. Four of the stations are regular, scheduled train stops. Six are flag stops, that is, passengers generally are required to have a reservation to board and alight flag stop stations; otherwise the train will pass the station at speed.

Only two of the stations are staffed and have baggage handling services, and only two have Amtrak’s QuikTrak automatic ticket vending machines. Station facilities are either platforms with shelters or structures with enclosed waiting rooms.

Five stations are fully wheel chair accessible; five others have some barriers for wheel chairs.

There are few transit connections at the stations, and limited parking is generally available at and/or near the stations.

5.6.1 ADA Compliance

Amtrak's A Report on Accessibility and Compliance with the Americans with Disabilities Act of 1990, produced in 2009, notes that four in-service Mississippi stations are required to be ADA compliant. These are Greenwood, Hattiesburg, Jackson, and Meridian. The other stations are either flag stop stations or have been closed since Hurricane Katrina in 2005.

The four were assessed as to the levels of ADA compliance of their station structures, platforms and pathways. Of the four, only Jackson's was found to be overall generally compliant, that is, rated at between 80-100 percent compliant. The others were found to be partially compliant, that is, rated at 21-79 percent compliant. The same report cited preliminary cost estimates for improvements ensuring ADA compliance and a state of good repair for station structures, platforms and pathways. For the four Mississippi stations these estimated costs totaled \$7.6 million.

There are also four suspended service stations in Mississippi. These are stations along the *Sunset Limited* Route from Orlando to New Orleans. The *Sunset* has not operated along this route since Hurricane Katrina, and it has not been determined if the service will be returned. The *Gulf Coast Service Plan Report* noted that should Amtrak service be restored east of New Orleans to Florida, the stations will need to be brought up to a state of good repair and made ADA compliant. The report estimated the cost to do so is \$2.4 million.

5.6.2 Station Characteristics

Table 5-4 summarizes existing Mississippi station-specific information.

5.7 Marion County Recreational Railroad

This tourist railroad in Columbia is sponsored by the Marion County Railroad Authority. It operates on a six mile round trip between Expo Center and Bluff Park in downtown Columbia. The trip lasts about an hour. No service is operated during the summer. Fares are \$2 per person four years old and older. Younger children ride free. Rolling stock consists of a locomotive, a coach and a caboose.

Table 5-4: Amtrak Stations in Mississippi

Location	Brookhaven	Greenwood	Hattiesburg	Hazlehurst	Jackson
Owner	Amtrak/City of Brookhaven	Canadian National	City of Hattiesburg	Canadian National	City of Jackson
Address	E Monticello and Railroad Ave Brookhaven, MS 39601	Carrolton Ave and E. Gibson St Greenwood, MS 38930	308 Newman Street Hattiesburg, MS 39401	N Ragsdale Ave and E Conway St Hazlehurst, MS 39083	300 West Capitol St Jackson, MS 39201
Flag Stop?	Yes	-	-	Yes	-
Served by:	City of New Orleans	City of New Orleans	Crescent	City of New Orleans	City of New Orleans
Platform Type	Single	Single	Single	Single	Double (Only Single in Service)
Length	400'	675'	950'	360'	700'
Construction	Brick Pavers	Brick Pavers	Concrete	Concrete	Concrete
Shelter	Enclosed Shelter (serves as main passenger waiting area)	Partial Awning	Fully Covered	Enclosed Shelter (serves as main passenger waiting area)	Partial Awning
Lighting	-	Fully-Lit	Fully- Lit	Fully-Lit	Fully-Lit
Platform Amenities	-	-	Benches	-	Benches
Passenger Safety	Yellow Safety Line	Yellow Safety Line	Tactile Paver Strip; Fully Fenced along Length of Platform	Tactile Pavers	Yellow Tactile Strip
ADA	Wheel Chair Accessible; Not All Station Facilities Accessible	Fully Accessible	Wheel Chair Accessible; Not All Station Facilities Accessible	Fully Accessible	Fully Accessible
Depot Hours	No Hours - Enclosed Shelter Not Secured	8:30 AM - 9:30 AM; 7:00 PM - 8:00 PM	9:15 AM - 10:15 AM; 3:45 PM - 4:45 PM	No Hours - Enclosed Shelter Not Secured	10:15 AM - 5:45 PM
Seating Capacity	~8	12	~24	~10	~160
Restrooms	-	-	Yes	-	Yes
Vending	-	-	Yes	-	Yes; Café
Ticketing	-	-	QuikTrak Kiosk	-	Staffed Counter; Baggage Service; QuikTrak
Telephones	-	Payphone	Free Telephone	-	Payphone
Shared Uses	-	CN Office	Public Meeting Spaces, Intermodal Facility for Hub City Transit	-	Union Station. Restaurant, Entertainment Areas, Greyhound Lobby
Parking	Adjacent On-street Parking. Not Designated for Station.	~16 Spaces - Shared with CN	~5 Adjacent to Depot; Auxiliary Lot across Street	Adjacent On-street Parking. Not Designated for Station.	~ 75, Pay-lot Adjacent to Station
ADA Parking Facilities	-	1 Accessible Space	2 Accessible Spaces	1 Accessible Space	2 Accessible Spaces
Intermodal	-	-	Transfer Center for Hub City Transit w/ Bus Bays	-	Greyhound, JATRA City Transit
Other	Depot Building Not Used for Passenger Waiting Area	\$974,000 in ADA Compliance and State of Good Repair Needs	\$1,369,000 in ADA Compliance and State of Good Repair Needs	Depot Building Not Used for Passenger Waiting Area	\$1,502,000 in ADA Compliance and State of Good Repair Needs

Location	Laurel	Meridian	McComb	Picayune	Yazoo City
Owner	City of Laurel	City of Meridian	City of McComb	City of Picayune	Amtrak/CN (Parking)
Address	230 N Maple St Laurel, MS 39440	1901 Front Street Meridian, MS 39301	114 NE Railroad Ave McComb, MS 39648	200 South Highway Picayune, MS 39466	222 West Broadway Yazoo City, MS 39194
Flag Stop?	Yes	-	Yes	Yes	Yes
Served by:	Crescent	Crescent	City of New Orleans	Crescent	City of New Orleans
Platform Type	Single	Double	Double (Only Single in Service)	Single	Single
Length	675'	300'	315'	90'	300'
Construction	Asphalt	Concrete	Asphalt	Asphalt	Concrete
Shelter	Partial Awning adjacent to Depot	Covered Platform, Awning adjacent to Depot	-	Partial Awning adjacent to Depot	Covered Shelter Adjacent to Platform
Lighting	-	Partial Lighting on Platform	-	-	Fully-Lit
Platform Amenities	Benches	Benches	Payphone	Benches	Benches
Passenger Safety	Yellow Safety Line	Yellow Safety Line	Yellow Safety Line	Yellow Safety Line	Yellow Safety Line, Tactile Edging
ADA	Wheel Chair Accessible; Not All Station Facilities Accessible	Wheel Chair Accessible; Not All Station Facilities Accessible	Wheel Chair Accessible; Not All Station Facilities Accessible	Fully Accessible	Fully Accessible
Depot Hours	-	24 hrs/day	12:00 PM - 4:30 PM	-	9:00 AM - 11:00 AM; 6:30 PM - 7:30 PM
Seating Capacity	~20	~60	~42	~24	~12
Restrooms	Yes	Yes	Yes	Yes	-
Vending	-	Yes, Café	-	Yes	-
Ticketing	-	Staffed Counter; Bagged Service	-	-	-
Telephones	Free Telephone	Payphone	Payphone	-	Payphone
Shared Uses	Meeting Rooms	Meridian Union Station. Greyhound Station and Ticket Counter, Package Express Counter, Meridian Transit System Offices, Freight Rail Offices	Chamber of Commerce, Meeting Rooms, Museum	Offices, Museum	-
Parking	~21 Adjacent to Depot; Auxiliary Lot across Street	~24 in Lot, Additional On-street	~ 8, Shared with Other Depot Tenants	~15 Spaces, Shared with Other Depot Tenants	~18 Spaces
ADA Parking Facilities	3 Accessible Spaces	2 Accessible Spaces	1 Accessible Space	2 Accessible Spaces	2 Accessible Spaces
Intermodal	-	Transfer Center for City of Meridian Transit, Greyhound Station	-	-	-
Other	-	\$3,773,000 in ADA Compliance and State of Good Repair Needs	-	-	-

6. RAIL TRAFFIC FLOWS

6.1 Introduction

Freight rail traffic movements within Mississippi will be described in terms of:

- Direction of freight flows;
- Geographic area;
- Growth trends;
- Commodity forecasts; and,
- Multimodal corridors.

The 2006 TRANSEARCH® commodity movement database is the primary data source for the rail traffic analysis. The data underlying the TRANSEARCH® rail database is the U.S. Surface Transportation Board's (STB) Carload Waybill Sample. The Waybill Sample is a stratified sample of carload waybills for all U.S. rail traffic submitted by rail carriers that terminate 4,500 or more revenue carloads annually. This analysis is based on the latest version of this database, produced in June 2010.

6.2 Freight Rail Commodity Profile

The State of Mississippi plays an important role in the nation's freight rail transportation system. In 2006, Mississippi's railroads carried a total of 130 million tons and moved 2.2 million carloads of goods, for a total value of \$126 billion as shown in **Table 6-1**. The vast majority, close to 80 percent of the total rail traffic or just over 100 million tons, passed through Mississippi without stopping. Aside from jobs associated with railroads, through freight generally has little positive effect on a state's economy. Most of Mississippi's through traffic resulted from flows between the markets located in Southwest, Southeast and Mountain regions of the country.

Inbound and outbound freight represented approximately 20 percent of the total. Inbound and outbound freight flows are important to understand because they represent commerce that is transported into the State for consumption, but more importantly, outbound freight flows represent commerce that is created within the State and sold to outside customers, creating employment opportunities for Mississippi's citizens. Although the State received more goods than it shipped out in terms of tonnage, the value of outbound goods was higher than the value of inbound goods by \$3.5 billion.

Internal freight represents commodities that flow between counties within Mississippi. Internal movements account for only 1.3 percent of the total rail tonnage.

Table 6-1: Mississippi's Rail Traffic Directional Flows

Traffic Type	Tons (million)	Percent	Carloads /Intermodal Units	Percent	Value (Million)	Percent
Interstate Inbound	16.4	12.6%	195,747	8.9%	\$9,604	7.6%
Interstate Outbound	9.8	7.5%	142,415	6.5%	\$13,111	10.4%
Intrastate	1.7	1.3%	19,916	0.9%	\$912	0.7%
Through Freight	102.5	78.6%	1,846,025	83.8%	\$102,823	81.3%
Total	130.5	100.0%	2,204,103	100.0%	\$126,451	100.0%

Source: Prepared by Wilbur Smith Associates based on 2006 TRANSEARCH® Data

6.2.1 Inbound Interstate Freight

Table 6-2 presents the tonnage of Mississippi's 2006 inbound commodities, which totaled 16.4 million tons and had a value of \$9.6 billion. Most inbound rail tonnage is bulky, dense and of low value per ton.

Table 6-2: Tonnage and Value for Inbound Freight Commodities (2006)

Commodity	2006 Tonnage	Percent of Tonnage	2006 Value (million)	Percent of Value	Average Value (\$/ton)
Coal	3,889,466	23.7%	\$109	1.1%	\$425
Farm Products	3,144,845	19.2%	\$517	5.4%	\$1,625
Chemicals or Allied Products	2,365,959	14.4%	\$2,570	26.8%	\$6,081
Nonmetallic Minerals	2,137,750	13.1%	\$29	0.3%	\$62
Food or Kindred Products	1,361,370	8.3%	\$1,463	15.2%	\$1,991
Pulp, Paper or Allied Products	916,820	5.6%	\$760	7.9%	\$697
Clay, Concrete, Glass or Stone	557,360	3.4%	\$166	1.7%	\$92
Metallic Ores	416,458	2.5%	\$198	2.1%	\$83
Petroleum or Coal Products	310,381	1.9%	\$196	2.0%	\$61
Waste or Scrap Materials	209,838	1.3%	\$49	0.5%	\$10
Other	1,069,019	6.5%	\$3,547	36.9%	\$3,792
Total	16,379,266	100.0%	\$9,604	100.0%	NA

Source: Prepared by Wilbur Smith Associates based on 2006 Transearch® Data

Coal is the principal inbound commodity representing almost a quarter of the inbound tonnage. The remaining top five commodities by tonnage are *Farm Products* at 19 percent, *Chemicals or Allied Products* at 14 percent, *Nonmetallic Minerals*¹⁴ at 13 percent, and *Food or Kindred Products* at 8 percent. The top five commodities accounted for 13 million tons or 79 percent of the inbound total tonnage.

¹⁴ Nonmetallic Minerals (SIC code 32 or NAICS code 327) generally include certain minerals such as stone, clay, glass and concrete that are processed into useful products but are neither metals nor fuels. More than 50 percent of these products are used as construction fill or concrete mix. Further clarification is available online at <http://minerals.usgs.gov/minerals/pubs/imii/>.

Value rankings for the top inbound commodities differ significantly from their ranking by tonnage. The value of the top five commodities is only 49 percent of the total compared to 79 percent for tonnage. The highest valued commodities include *Chemicals or Allied Products* at 27 percent as well as *Food or Kindred Products* and *Farm Products*, which combine for 21 percent. Some commodities that had light tonnage such as *Transportation Equipment* and *Ordnance or Accessories*, had high values around \$1.6 billion and \$5 million, respectively. *Coal* and *Nonmetallic Minerals*, which were the major inbound commodities by tonnage, accounted for only 1 percent and 0.3 percent of the total commodity values.

6.2.2 Outbound Interstate Freight

Table 6-3 presents the outbound commodities in Mississippi, which totaled 9.8 million tons in 2006. Chemicals or Allied Products; Lumber or Wood Products; and, Pulp, Paper or Allied Products were the most important outbound commodities in terms of tonnage. These three commodities represented over 75 percent of the total tonnage.

Table 6-3: Tonnage and Value for Outbound Freight Commodities (2006)

Commodity	2006 Tonnage	Percent of Tonnage	2006 Value (million)	Percent of Value	Average Value (\$/ton)
Chemicals or Allied Products	3,293,421	33.5%	\$4,651	35.5%	\$1,412
Lumber or Wood Products	2,203,938	22.4%	\$702	5.4%	\$319
Pulp, Paper or Allied Products	1,865,432	18.9%	\$1,085	8.3%	\$582
Petroleum or Coal Products	583,994	5.9%	\$424	3.2%	\$727
Transportation Equipment	463,110	4.7%	\$5,111	39.0%	\$11,036
Clay, Concrete, Glass or Stone	415,757	4.2%	\$70	0.5%	\$169
Food or Kindred Products	312,972	3.2%	\$244	1.9%	\$778
Waste or Scrap Materials	144,770	1.5%	\$45	0.3%	\$307
Primary Metal Products	111,464	1.1%	\$171	1.3%	\$1,533
Misc Mixed Shipments	64,922	0.7%	\$283	2.2%	\$4,354
Other	384,763	3.9%	\$326	2.5%	\$847
Total	9,844,543	100.0%	\$13,111	100.0%	NA

Source: Prepared by Wilbur Smith Associates based on 2006 TRANSEARCH® Data

Value rankings for the top outbound commodities show that *Transportation Equipment* at 39 percent and *Chemicals or Allied Products* at 35 percent had the largest share of the total value. These two commodities accounted for 74 percent of the total value of outbound freight values in 2006. *Transportation Equipment* had the highest average value in terms of dollar per ton. *Misc. Mixed Shipments*, which also had a high value per ton, are comprised of consumer goods, electronics, apparel, etc., which are light weight but have higher value per ton shipped.

6.2.3 Through Traffic

Table 6-4 presents through traffic movements, which amounted to 102 million tons in 2006. *Coal* at 33 percent and *Chemical or Allied Products* at 20 percent had the largest share of tonnage accounting for over 50 percent of the 2006 total through freight.

Table 6-4: Tonnage and Value of Through Freight Commodities (2006)

Commodity	2006 Tonnage	Percent Of Tonnage	2006 Value (million)	Percent of Value	Average Value (\$/ton)
Coal	33,474,468	32.7%	\$973	0.9%	\$29
Chemicals or Allied Products	20,381,500	19.9%	\$27,479	26.7%	\$1,348
Farm Products	8,255,264	8.1%	\$1,552	1.5%	\$188
Misc Mixed Shipments	6,893,220	6.7%	\$156	0.2%	\$23
Pulp, Paper or Allied Products	6,240,815	6.1%	\$4,674	4.5%	\$749
Food or Kindred Products	4,545,698	4.4%	\$4,002	3.9%	\$880
Primary Metal Products	3,970,646	3.9%	\$5,440	5.3%	\$1,370
Metallic Ores	3,879,108	3.8%	\$798	0.8%	\$206
Clay, Concrete, Glass or Stone	3,708,598	3.6%	\$138	0.1%	\$37
Petroleum or Coal Products	2,872,345	2.8%	\$1,749	1.7%	\$609
Other	8,302,364	8.1%	\$55,862	54.3%	\$6,728
Total	102,524,026	100.0%	\$102,823	100.0%	NA

Source: Prepared by Wilbur Smith Associates based on 2006 TRANSEARCH® Data

Value rankings for the top through traffic commodities show that *Chemical or Allied Products* at 27 percent had the highest share by commodity value. *Primary Metal Products* at 5 percent; *Pulp, Paper or Allied Products* at 5 percent; and, *Food or Kindred Products* at 4 percent were the next highest ranked commodities.

6.2.4 Intrastate Freight

In 2006 there was approximately 1.7 million tons of intrastate rail freight traffic. The top commodities by weight were *Metallic Ores*, *Food or Kindred Products*, *Lumber or Wood Products*, *Farm Products*, and *Pulp, Paper or Allied Products*, as shown in **Table 6-5**. These five commodities make up 79 percent of the intrastate rail tonnage in Mississippi.

Table 6-5: Tonnage and Value of Intrastate Freight Commodities (2006)

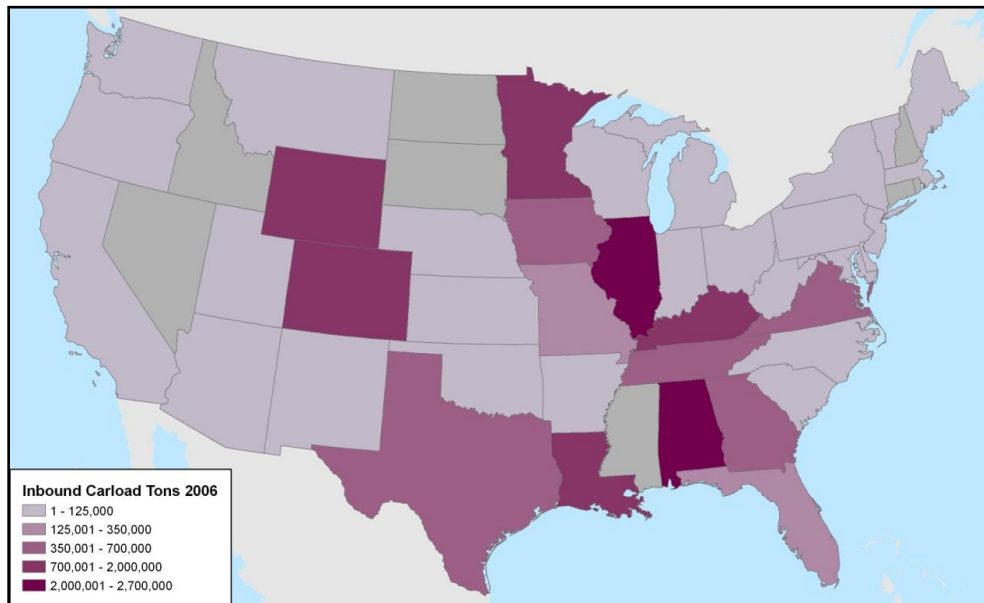
Commodity	2006 Tonnage	Percent of Tonnage	2006 Value (million)	Percent of Value	Average Value (\$/ton)
Metallic Ores	453,492	26.3%	\$179	19.6%	\$395
Food or Kindred Products	389,528	22.6%	\$316	34.7%	\$811
Lumber or Wood Products	303,755	17.6%	\$12	1.3%	\$39
Farm Products	111,232	6.4%	\$16	1.8%	\$147
Pulp, Paper or Allied Products	107,724	6.2%	\$79	8.6%	\$729
Chemicals or Allied Products	95,156	5.5%	\$186	20.4%	\$1,954
Nonmetallic Minerals	75,544	4.4%	\$14	1.5%	\$185
Clay, Concrete, Glass or Stone	72,570	4.2%	\$5	0.6%	\$74
Petroleum or Coal Products	72,101	4.2%	\$55	6.0%	\$762
Transportation Equipment	20,830	1.2%	\$45	4.9%	\$2,161
Waste or Scrap Materials	15,560	0.9%	\$5	0.5%	\$307
Waste Flammable Liquids	7,600	0.4%	\$0	0.0%	\$0
Total	1,725,093	100.0%	\$912	100.0%	NA

Source: Prepared by Wilbur Smith Associates based on 2006 TRANSEARCH® Data

6.3 Rail Geographic Profile

In 2006, more than 16.4 million tons of rail freight terminated in Mississippi. **Figure 6-1** presents the top states that shipped freight to Mississippi. *Coal* was the largest rail commodity into the State of Mississippi. Fifty-six percent of the inbound coal came from western mines, including Colorado and Wyoming; while close to 40 percent of the coal came from Appalachian mines. Other states that generated significant amounts of rail freight for Mississippi include Alabama, Illinois, Louisiana and Minnesota.

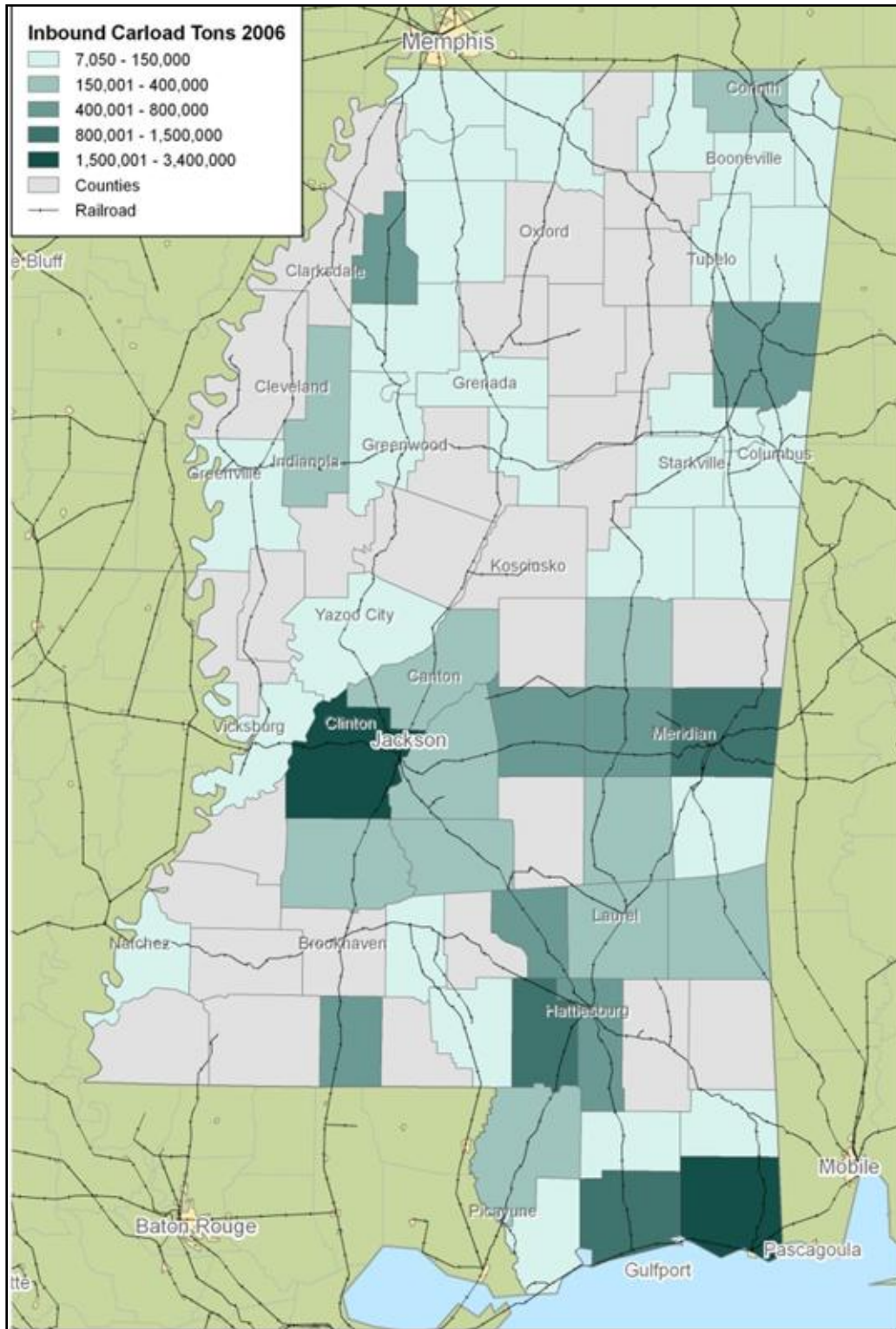
Figure 6-1: Origin of Interstate Rail Traffic Terminating in Mississippi



Source: Prepared by Global Insight

As shown in **Figure 6-2** the top destinations for the inbound rail freight are concentrated in Jackson, Hinds, Lamar (Hattiesburg), Harrison, and Lauderdale Counties. The Union Pacific Railroad (UP) mainline to Memphis forms part of the major coal route to the northern border of Mississippi. At Memphis it can be interchanged with CSX Railroad, Norfolk Southern Railroad (NS) or Canadian National Railway (CN) depending on the destination. CN is a major freight rail carrier between Chicago and Jackson. Freight also flows through Birmingham on the NS between the Southeast and Mississippi. Other inbound flows on NS originate in Kentucky and Tennessee.

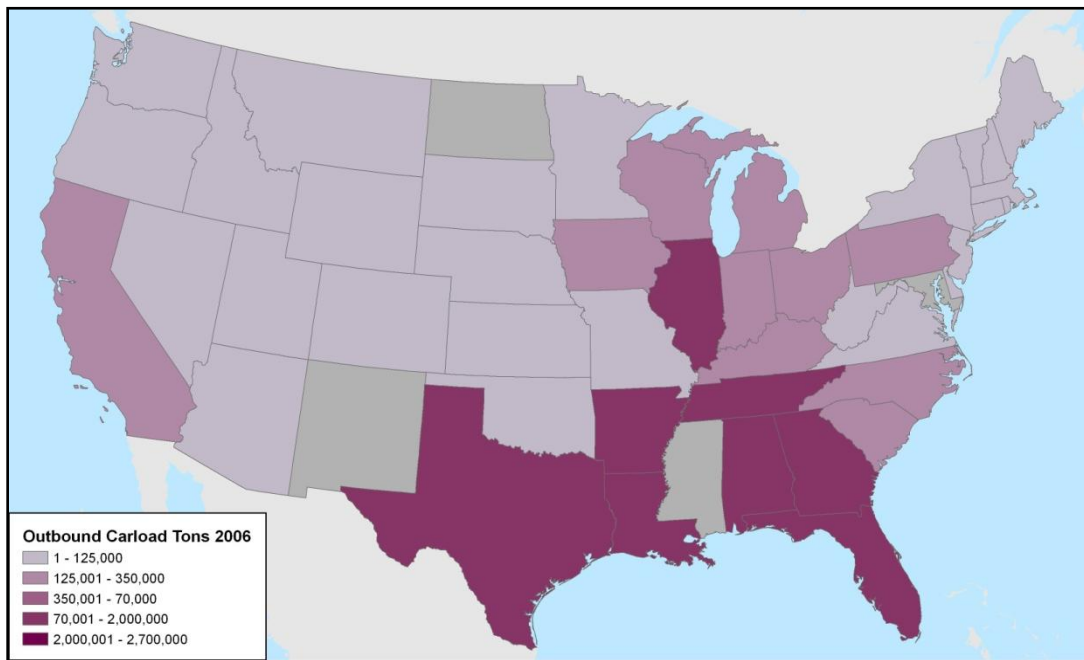
Figure 6-2: Inbound Carload Tons by County (2006)



Source: Prepared by Wilbur Smith Associates based on 2006 TRANSEARCH® Data

Around 9.8 million tons of rail freight was transported out of Mississippi in 2006. **Figure 6-3** presents the top destinations for the freight that originated in Mississippi. Much of the rail freight that originated in Mississippi was relatively short haul and was shipped predominantly to states in the Southeast, such as Tennessee, Louisiana, Alabama, Georgia, Florida, and Arkansas.

Figure 6-3: Destination States of Rail Freight Originated in Mississippi (2006)

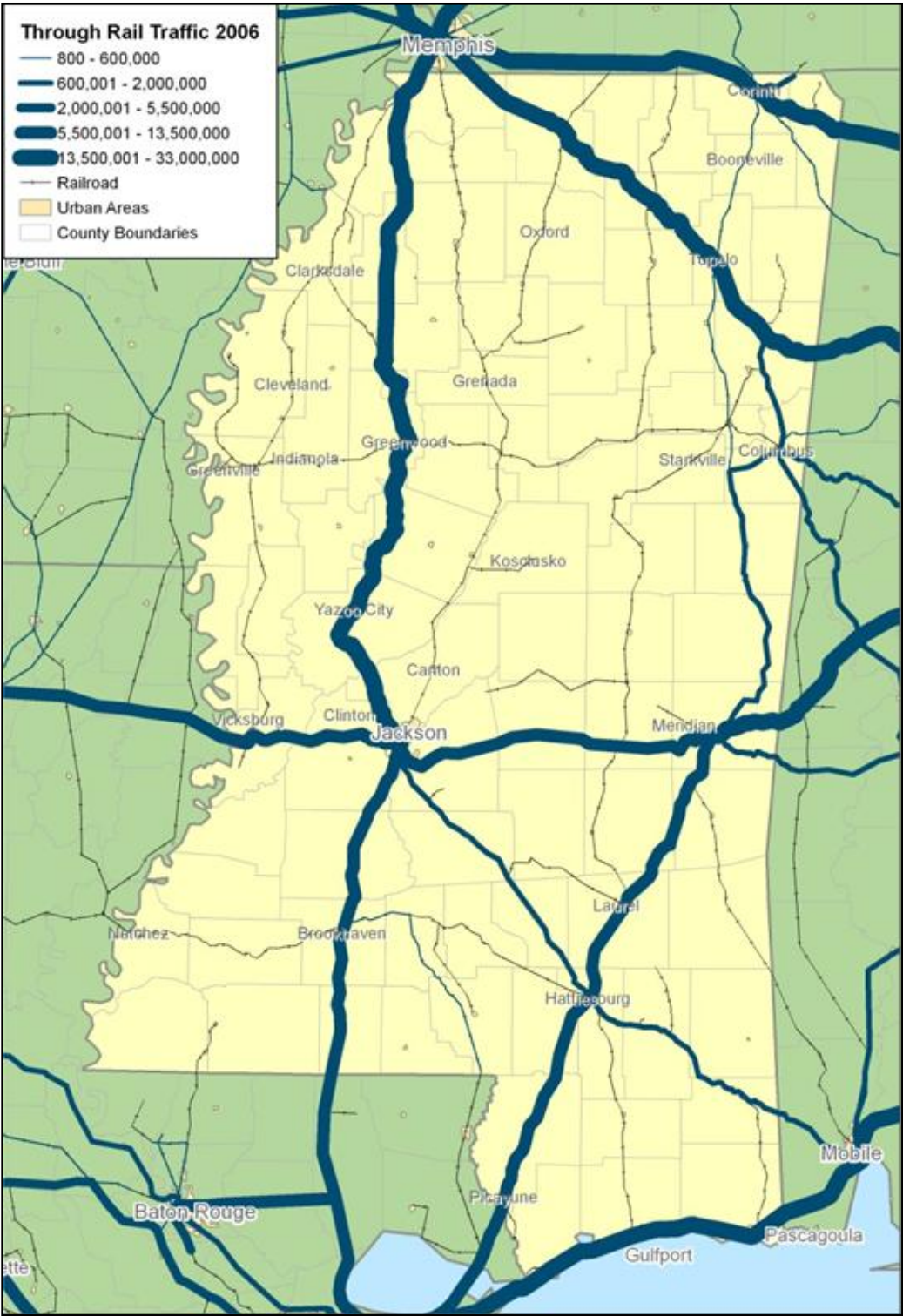


Source: Prepared by Wilbur Smith Associates based on 2006 TRANSEARCH® Data

The top origins for the outbound traffic concentrated on the following rail corridors, including north on CN to Chicago and Memphis, west to Dallas on Kansas City Southern Railway (KCS), between Hattiesburg, MS and Jackson, MS on BNSF Railway, and east to Atlanta and Tennessee on NS/KCS.

In 2006, Mississippi rail lines carried more than 102 million tons of through rail traffic across the State. Through traffic accounted for a significant portion of non-intermodal rail tonnage. While this freight does not impact the State directly, it does affect line capacity, rail infrastructure development, local rail service and traffic crossing congestion. **Figure 6-4** presents the major Class I rail corridors for through traffic across Mississippi. The CN mainline from Jackson to Hattiesburg is used much more extensively for inbound and outbound rail traffic in Mississippi than for through traffic across the State.

Figure 6-4: Through Rail Traffic across the Mississippi Rail Network (tons, 2006)

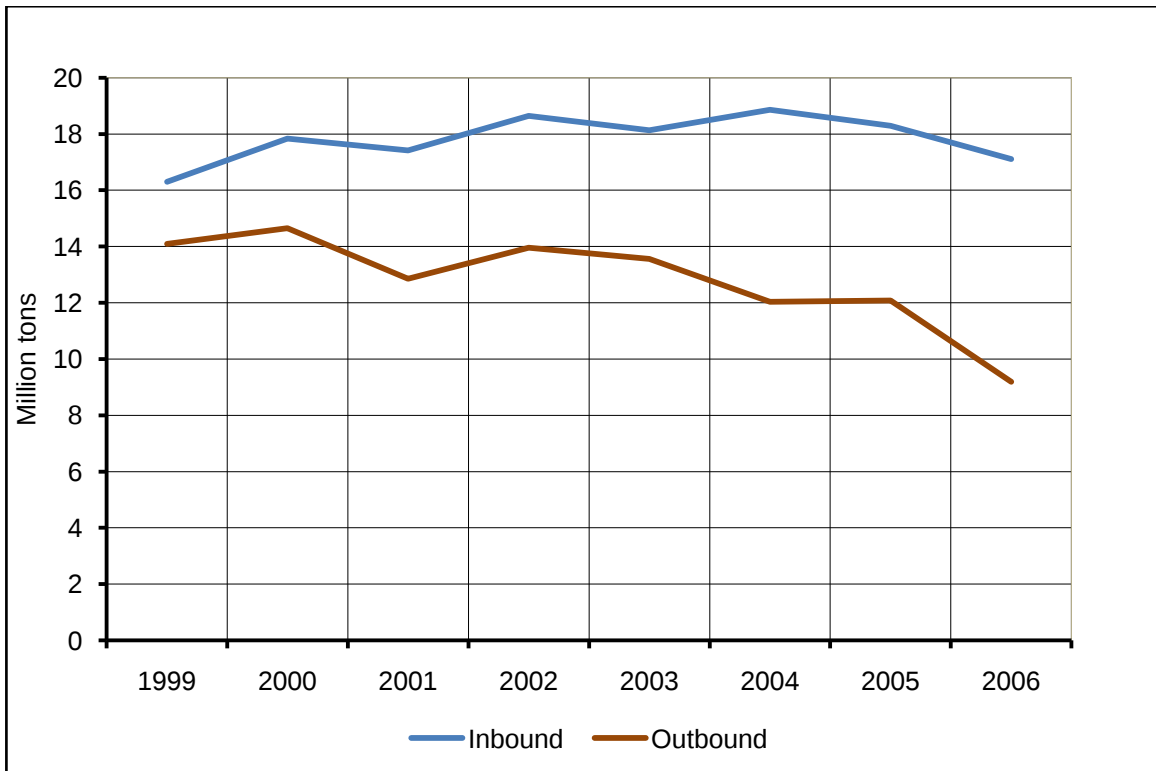


Source: Prepared by Wilbur Smith Associates based on 2006 TRANSEARCH® Data

6.4 Rail Traffic Growth

Figure 6-5 presents the historical inbound and outbound rail tonnage for Mississippi. Inbound traffic was larger than outbound traffic. Up to 2005, the inbound traffic to Mississippi was increasing. However, in 2005, inbound traffic started a decline. Outbound traffic has been in a gradual decline since 2000. Outbound traffic experienced a faster rate of decline between 2005 and 2006.

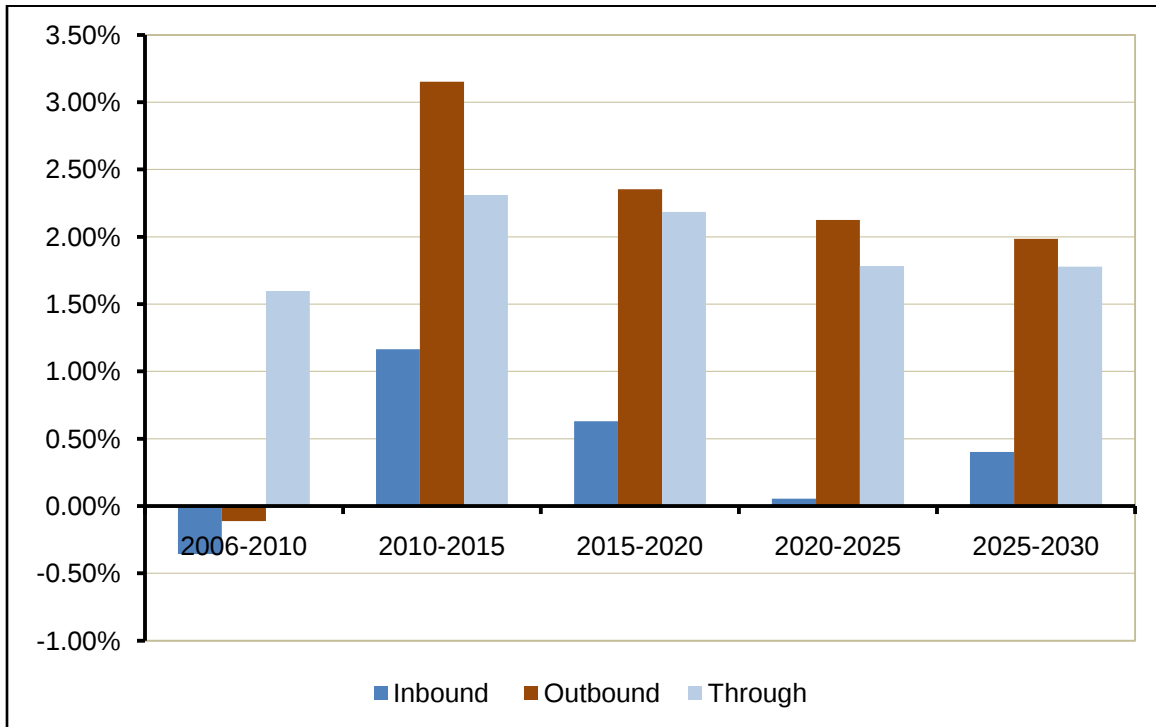
Figure 6-5: Historical Rail Traffic in Mississippi (1999-2006)



Source: U.S. Bureau of Transportation Statistics, *State Transportation Statistics*, available online at http://www.bts.gov/publications/state_transportation_statistics/

Figure 6-6 presents Global Insight's forecast of rail freight in Mississippi to 2030 based on its 2006 national and state macroeconomic projections. The forecast indicates that over the period 2006 to 2030, the inbound rail traffic is expected to grow slowly at or below 1 percent per year. Outbound is forecast to grow at 3 percent annually up to 2015 and settle at 2 percent annual growth by 2030. Through traffic is forecast to grow around 2 percent for the next 20 years.

Figure 6-6: Freight Growth Projected by Global Insight



Source: Prepared by Wilbur Smith Associates based on 2006 TRANSEARCH® Data

Table 6-6 presents the 2006 base year and 2030 forecasted year for Mississippi rail tonnage. Inbound traffic is forecasted to grow by 10 percent over the forecast period. Outbound traffic, driven by the production activities in the State, is anticipated to have the highest growth rate of 60 percent over the forecast period, with a compound annual growth rate (CAGR) equal to 2 percent. Through traffic is forecasted to increase by 57 percent. Intrastate traffic is forecast to decline by 5 percent over the forecast period.

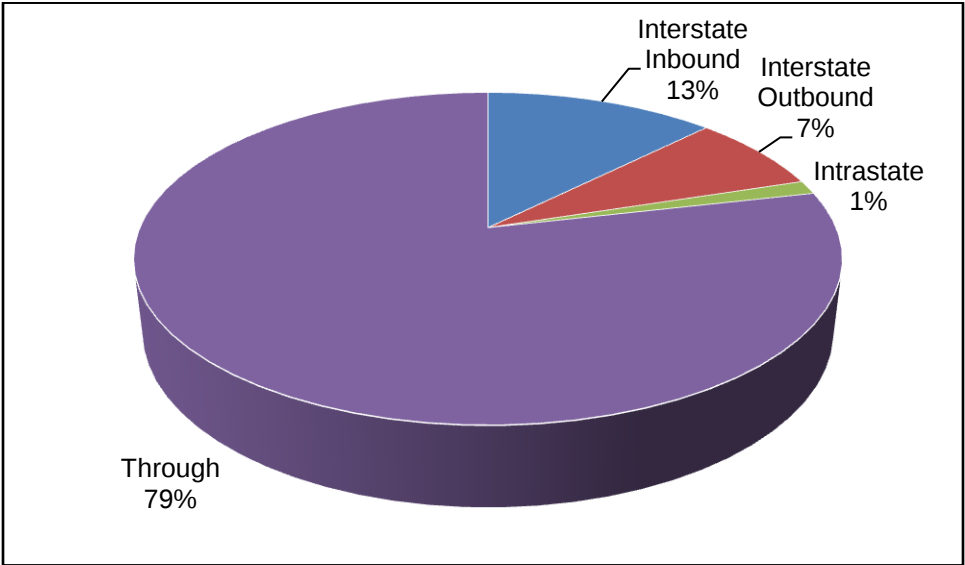
Table 6-6: Forecasted Rail Traffic for Mississippi by Traffic Type

Traffic Type	2006 Tonnage (millions)	2006 Share (%)	2030 Tonnage (millions)	2030 Share (%)	Change (%)	CAGR (%)
Interstate Inbound	16.38	12.6	18.06	9.20	10.3%	0.4%
Interstate Outbound	9.84	7.5	15.76	8.03	60.0%	2.0%
Intrastate	1.73	1.3	1.64	0.84	-5.0%	-0.2%
Through	102.52	78.6	160.85	81.94	56.9%	1.9%
Total	130.47	100.0	196.31	100.00	50.5%	1.7%

Source: Prepared by Wilbur Smith Associates based on 2006 TRANSEARCH® Data

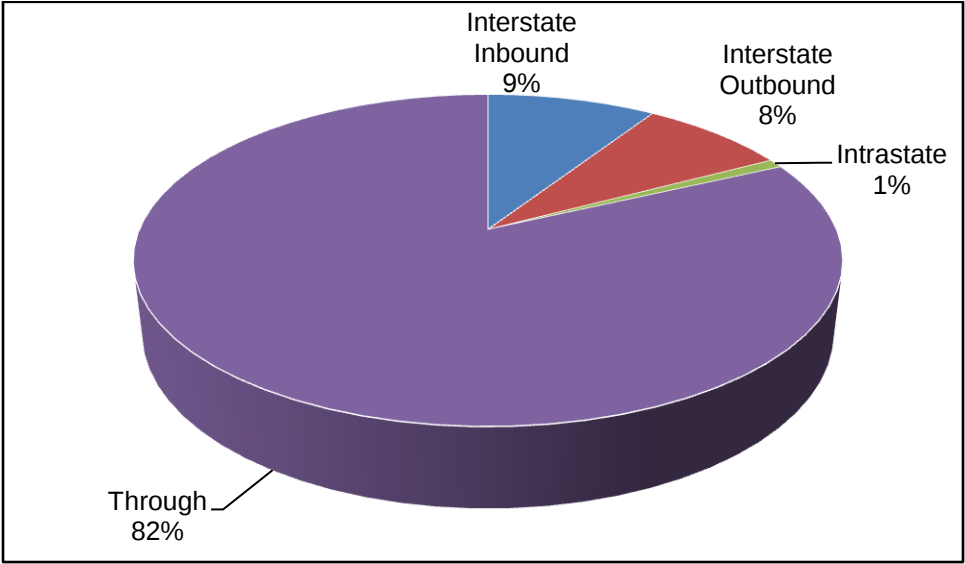
In 2030, through traffic share will increase by over 3 percent to 82 percent and outbound traffic share will increase by approximately 0.5 percent as shown in **Figure 6-7** and **Figure 6-8**. Inbound share of the total traffic will decline by over 3 percent to 9 percent, and internal traffic is anticipated to decline by 0.5 percent.

Figure 6-7: Share of Rail Traffic (2006)



Source: Prepared by Wilbur Smith Associates based on 2006 TRANSEARCH® Data

Figure 6-8: Share of Rail Traffic in 2030



Source: Prepared by Wilbur Smith Associates based on 2006 TRANSEARCH® Data

Table 6-7 presents the share of rail traffic by commodity in 2006 and 2030. Most commodities are expected to have moderate annual growth rates between 0.5 percent and 2 percent, such as *Chemical Products*, *Farm Products*, and *Food or Kindred Products*, etc. *Metallic Ores*, *Nonmetallic Minerals*, *Paper Products* and *Waste or Scrap Materials* are expected to grow faster, with CAGR above 2 percent annually. *Lumber and Wood Products* are anticipated to decline over the period 2006 to 2030. *Coal* tonnage is also expected to grow. In part, this may reflect the continued shift toward western coal, which has a lower heat content than eastern coal. Therefore, more coal must be transported and burnt in order to produce the same heat. However, future demand for coal could change due to environmental issues.

Table 6-7: Forecasted Rail Traffic for Mississippi by Commodity

Commodity	2006		2030		CAGR (2006-2030)
	Tonnage (million)	Share	Tonnage (million)	Share	
Coal	37.36	28.6%	58.16	29.6%	1.9%
Chemicals or Allied Products	26.14	20.0%	29.01	14.8%	0.4%
Farm Products	11.63	8.9%	13.25	6.8%	0.6%
Pulp, Paper or Allied Products	9.13	7.0%	16.50	8.4%	2.5%
Food or Kindred Products	6.61	5.1%	9.48	4.8%	1.5%
Lumber or Wood Products	4.94	3.8%	4.47	2.3%	-0.4%
Metallic Ores	4.76	3.6%	10.20	5.2%	3.2%
Nonmetallic Minerals	3.48	2.7%	6.75	3.4%	2.8%
Petroleum or Coal Products	3.84	2.9%	5.41	2.8%	1.4%
Clay, Concrete, Glass or Stone	4.75	3.6%	7.52	3.8%	1.9%
Transportation Equipment	2.24	1.7%	3.48	1.8%	1.9%
Waste or Scrap Materials	1.60	1.2%	2.75	1.4%	2.3%
Other	13.99	10.7%	29.32	14.9%	3.1%
Total	130.47	100.0%	196.31	100.0%	1.7%

Source: Prepared by Wilbur Smith Associates based on 2006 TRANSEARCH® Data

Although the forecasts that appear in this study were developed before the 2007 to 2009 recession, it is anticipated that these long-term forecasts will remain valid. The growth rates predicted for the 24-year period will not likely be unduly impacted by the short-term influence of the recession.

6.5 Rail Corridors

MDOT's 2010 *Mississippi Goods Movement and Trade Study* corridor analysis defined six multimodal corridors in the state. The key Mississippi multimodal corridors serve the regions (grouped counties) within Mississippi that produce and attract a significant amount of freight tonnage (compared to other counties that do not lie along these multimodal corridors) and facilitate Mississippi trade with the national and international markets. These corridors can be distinguished from Mississippi's branch line network, which is important in feeding rail traffic to and from these corridors. Traffic characteristics on the multimodal corridors are summarized in **Table 6-8**.

Table 6-8: Summary of Traffic on Primary Mississippi Trade Corridors

Corridor	Description	Traffic Description
Southaven-McComb Corridor	CN mainline between Memphis and New Orleans, entering Mississippi near Memphis and exiting near McComb.	The Southaven-McComb Corridor carried 19 million tons in 2006, with a total value of \$17 billion. Around 80 percent of the freight is through movements in tonnage, but only accounted for 55 percent in value. The most important inbound commodities carried along this corridor include <i>Farm Products</i> (e.g., grain), <i>Primary Iron or Steel Products</i> and <i>Broken Stone or Riprap</i> . Major commodities shipped along this corridor out of Mississippi include <i>Fertilizer</i> , <i>Motor Vehicles</i> and <i>Industrial Gases</i> , with destinations mainly in Tennessee, Wyoming, Montana, and Arkansas.
Gulf Coast Corridor	CSXT mainline that parallels the Gulf Coast	The Gulf Coast Corridor carried 17 million tons of rail freight in 2006, with a total value of \$28 billion. Through freight accounted for 86 percent in tonnage and 94 percent in commodity value. Thirteen percent of the goods were tied to the economies in the three counties along this corridor (Jackson, Harrison, and Hancock Counties). The most important inbound commodities along this route include <i>Coal</i> and <i>Construction Materials</i> (e.g., <i>Broken Stone or Riprap</i>). <i>Coal</i> supplies the coal-fired power plants in Jackson and Harrison Counties. The major commodities shipped out from this corridor are <i>Chemical or Allied Products</i> and <i>Petroleum or Coal Products</i> .
Jackson-Hattiesburg-Gulfport Corridor	CN Beaumont Subdivision between Jackson and Hattiesburg, KCS Gulfport Subdivision between Hattiesburg and Gulfport	The Jackson-Hattiesburg-Gulfport Corridor carried 25 million tons of goods in 2006, with a total value of \$22 billion. Through movements were the biggest traffic component, accounting for about 90 percent of the total freight in terms of both tonnage and value. <i>Grain</i> is the major inbound commodity carried on this corridor, with the primary destinations in Simpson and Covington Counties. The major outbound commodity is <i>Petroleum and Coal Products</i> , mainly originated from Forrest and Rankin Counties.
Vicksburg-Meridian Corridor	KCS/NS Meridian Speedway	The Vicksburg-Meridian Corridor carried 29 million tons of goods in 2006, with a total value of \$37 billion. Inbound freight along this corridor comprised <i>Construction Materials</i> (e.g., <i>Broken Stone or Riprap</i>) and <i>Chemical or Allied Products</i> . The outbound commodities mainly include <i>Chemical or Allied Products</i> , <i>Pulp</i> , <i>Paper or Allied Products</i> and <i>Lumber or Wood Products</i> .
Picayune-Meridian Corridor	NS mainline between Meridian and New Orleans, exiting Mississippi near Picayune	The Picayune-Meridian Corridor carried over 20 million tons of freight in 2006, with a total value of \$31 billion. Through freight is the largest sector, accounting for 83 percent of the total tonnage along this corridor. Different from other corridors, Picayune-Meridian Corridor is also heavily oriented toward inbound traffic, which accounted for 3 million tons in 2006, compared to 0.5 million tons of outbound traffic. <i>Coal</i> from Kentucky is one of its major inbound commodities. The coal demand is driven by one coal-fired power plant (R D Morrow Plant) in Lamar County, MS. The most valuable inbound goods are <i>Motor Vehicles</i> , with the destination at the NS/Ford facility in Lauderdale County, MS.
Olive Branch-Tupelo-Fulton Corridor	BNSF mainline between Memphis, TN and Birmingham, AL	According to the TRANSEARCH® data, the Olive Branch-Tupelo-Fulton Corridor has the highest percentage of through traffic of the six corridors, accounting for over 98 percent in tonnage in 2006. A large portion of traffic on this corridor is <i>Powder River Basin Coal</i> traveling to Georgia Power plants. Inbound and outbound traffic only accounted for 1.6 percent.

Source: Wilbur Smith Associates, Mississippi Trade and Transportation Assessment

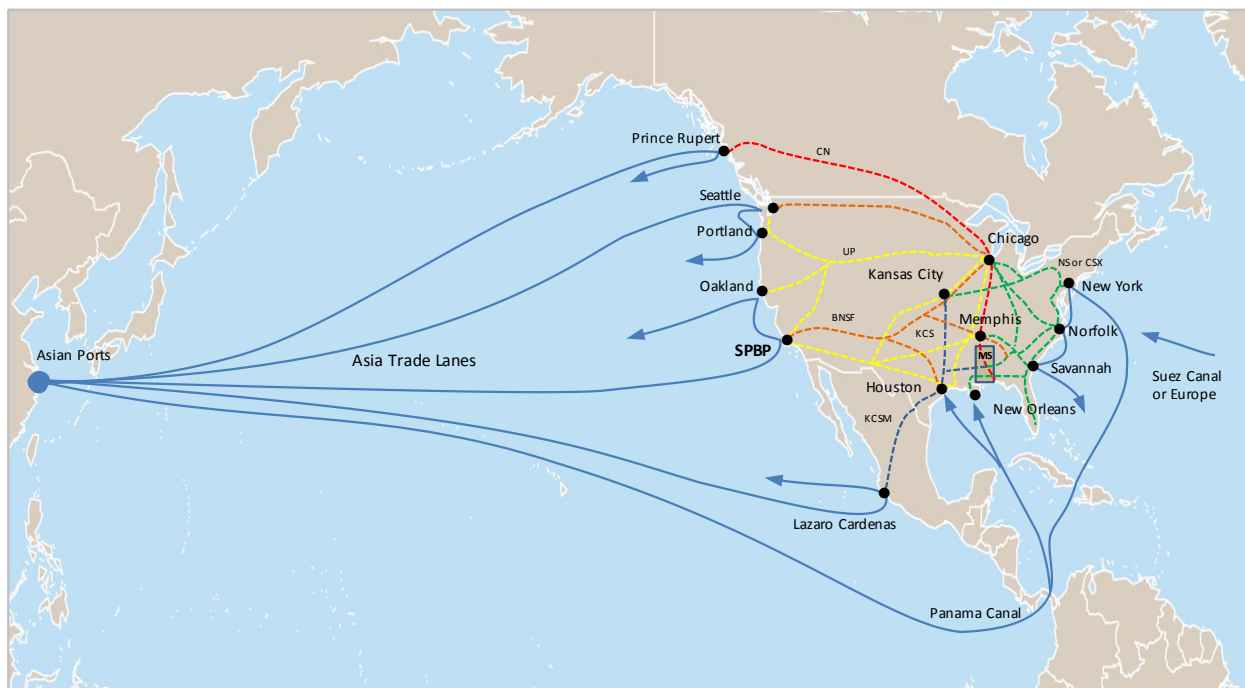
6.6 Impacts of Structural Changes

6.6.1 North American Gateways

The Port of Los Angeles and the Port of Long Beach, otherwise known as the San Pedro Bay Ports (SPBP), handle the majority of Asian/U.S. imports and exports (**Figure 6-9**). Shippers and consignees experienced labor issues in 2004 and 2005 and driver slowdowns at Oakland and Stockton, CA in 2008, which prompted them to search for alternatives for their international trade movements. They have adopted what is termed the “four corners approach” to diversify the risk of importing the majority of their freight through the SPBP. This approach uses port access in the Pacific Northwest, the Atlantic East Coast and the Gulf of Mexico to complement flows through SPBP.

A key example is Wal-Mart. As of 2009, Wal-Mart has diverted 85 percent of its Asian inbound freight away from the SPBP, some of it through the Port of Houston. Wal-Mart has built over 2 million square feet of warehouse distribution space in Houston, TX. Other large importers have followed Wal-Mart’s lead and have investigated using the Panama Canal or the Suez Canal to bypass SPBP. Many have now built warehouses clustered around the alternative ports along the East Coast in Norfolk, VA or Savannah, GA to receive their freight via all-water vessel service and avoid the SPBP and possible inland rail delays.

Figure 6-9: Asia to U.S. Trade Lanes



Source: Wilbur Smith Associates

An alternative to having Asian freight enter the U.S. through SPBP is to use one of the U.S. East Coast ports after transit through the Panama Canal. However, due to the longer journey to reach the Panama Canal and then up to the East Coast ports, the transit duration is much longer. Sailing time from Asia to SPBP is approximately 13 to 16 days depending on the Asian port of origin. It takes another 5 to 6 days for a container to travel by rail from Los Angeles to Memphis for a total Asia to Memphis transit duration in the range of 18 to 22 days, excluding port clearance time. Memphis is used as an example destination because most points in Mississippi are within next-day service range by truck.

Sailing time from Asia to the East Coast ports via the Panama Canal is approximately 25 to 28 days depending on the East Coast port of entry. It takes another 2 to 3 days for a container to travel by truck or rail from an East Coast port to Memphis for a total transit duration of 27 to 31 days. Thus, a Panama Canal delivery can take from 5 to 13 days longer. Time sensitive, high velocity commodities such as apparel, back to school or holiday goods, electronics, consumer goods, etc. will use the SPBP gateway because these goods have a shorter shelf life. Replenishment goods such as chemicals, paints, hardware, etc., which are not as time sensitive, may be able to absorb the longer transit duration if there is a corresponding off-set in cost to mitigate longer inventory carrying costs. Each shipper evaluates these commodity supply chain trade-offs annually during negotiations with the ocean and rail carriers and selects the most appropriate landed cost model. For this reason the shippers' selection of modes, routes and carriers constantly evolve because carriers must adjust rates to optimize the amount of freight they can profitably carry.

6.6.2 Panama Canal Expansion

In 2001, the Panamanian Government commissioned a strategic assessment designed to keep the Panama Canal competitively positioned to capture increased international trade and maintain its long-term sustainability as a trade route between Asia and the U.S. East Coast ports. A major reason that all-water containerized service between the U.S. East Coast and Asia had not increased in prior decades was that the vessel transit capacity through the Panama Canal is limited to approximately 40 vessels per day in each direction (14,000 vessels per year). Canal Water Time (CWT), the duration it takes to transit the Canal between the Atlantic and Pacific, averages from 15 to 30 hours – including wait time at the locks.

In 2006, the Canal transit distribution was:

- Containerships represented 35 percent of the vessels that transited the Canal;
- Dry bulk ships represented 20 percent;
- Vehicle carrier vessels represented 10 percent; and,
- The remaining 35 percent was spread among liquid bulk, reefer, cruise ship, general cargo and miscellaneous (naval and research vessels, fishing vessels, barges, etc.)

Containerships that currently transit through the Panama Canal are classified as “Panamax”. Their size limitation is 965 feet in length, 106 feet in width, and they have a draft limitation of 40 feet. Panamax containerships carry approximately 4,500 to 5,000 TEUs¹⁵. Of the eastbound containerships that transit the Canal, approximately 50 percent of containerized freight was destined for the U.S. East Coast and Gulf Coast ports.

The Panama Canal Expansion project is estimated to cost \$5.2 billion. The plan calls for two new lock facilities – one on the Atlantic side and the other on the Pacific side. The plan is to increase the length, width and depth of the locks on both locks. The inland Canal channels are to be widened to 740 feet and dredged to 51 feet deep to accommodate the next generation of larger “super post-Panamax” containerships. Super post-Panamax containerships are in the range of 1,200 feet long, 160 feet wide, and have a draft of 50 feet. The project is currently under construction and is scheduled for completion in 2015.

The Panama Canal Expansion project will not necessarily allow more vessels to transit the Canal, but since much larger containerships will be able to transit the Canal the total number of containers passing through the Canal each year will more than double. A super post-Panamax containership that carries 12,000 TEUs will carry approximately 2.5 times as many TEUs as a current generation Panamax containership.

As part of the *Mississippi Goods Movement and Trade Study*, IHS Global Insight forecasted the impact of the Panama Canal Expansion project on the rail network of Mississippi. The analysis showed that the greatest impact of the project would be on export grain shipments from the Port of New Orleans. This would in turn increase grain shipments on the Mississippi River and over Mississippi rail and highway connections. However, the vast majority of incremental tonnage would move to the Port by water or truck. The overall impact on Mississippi’s rail network should be minimal, although some future commercial arrangement between a shipper and ocean vessel operator could generate new containerized volume that could be handled through the Port of Gulfport.

Thus, the Panama Canal Expansion project could generate more containerized traffic through the Port of Gulfport and increase the demand for rail transportation to and from the Port. But this would only occur if one of two developments were to happen:

1. The harbor is dredged to a depth that could accommodate post-Panamax vessels; or,

¹⁵ A TEU is a standard international term for “twenty-foot equivalent unit” or simply put a 20-foot container. International shipping containers are 20-foot, 40-foot or 45-foot long, 8-feet wide, and 8.5-feet high. They are corrugated steel units designed to standards set by the International Standards Organization (ISO). A FEU is a 40-foot equivalent unit (FEU).

2. A feeder network is established where post-Panamax vessels would visit a deep water port in the Caribbean such as Port of the Americas in Puerto Rico or the Kingston Container Terminal in Jamaica, where containers could be transloaded to shallower draft vessels.

These feeder vessels would then visit shallower ports, such as Gulfport. Currently, the Port of Gulfport has a channel depth of 36 feet. This is too shallow to accommodate post-Panamax ships, which require a channel depth of between 42 and 50 feet. The Port of Gulfport has plans to bring the channel depth to 45 feet with associated widening of the channel and turning basin. At this depth the Port of Gulfport could accommodate smaller post-Panamax vessels. If the channel is enlarged or a feeder network is established, the Panama Canal expansion project could cause more rail traffic to visit the Port of Gulfport than otherwise would have without the project.

The Panama Canal could also potentially impact through traffic movements across Mississippi. The Meridian Speedway between Shreveport, LA and Meridian is often used for eastbound “land bridge” movements,¹⁶ bringing cargo from SPBP to markets in Birmingham, Atlanta, and Charlotte. A shift toward East Coast ports could reduce the volume of eastbound traffic that must cross Mississippi on this corridor. It could also reduce the volume of traffic handled at Memphis, as the markets in the Southeast could be served by East Coast ports, rather than traffic handled through SPBP to Memphis and then onward to the Southeast markets.

6.6.3 All-water Suez Canal

It is anticipated that a higher volume of import containers will travel from Southeast Asia or the Indian Subcontinent by an all-water route to the East Coast by way of the Suez Canal. The Suez Canal Authority has been actively marketing for cargoes that would have otherwise crossed the Pacific to reach the United States. Formerly, shipping products from Asia to the U.S. by the Suez Canal was only cost effective for traffic originating at Singapore, Southeast Asia or points in India. Some port experts believe that this dividing line has shifted eastward, so that some Hong Kong cargoes would now be better off shipped to the U.S. by the Suez Canal instead of sailing eastward over the Pacific.

Until 2007 and 2008, the traffic through the Suez Canal increased rapidly. For example, intermodal traffic from Asia increased by 19 percent in 2007.¹⁷ However, the number of container vessels transiting the Canal decreased by approximately 25 percent since 2009.¹⁸

¹⁶ Land bridge movements are the inland portion of a multimodal shipment that combines ocean, rail and truck modes to complete the move.

¹⁷ Congressional Research Service: U.S.-Viet Nam Trade Relations: Background Analysis and Issues for Congress, October 31, 2008.

¹⁸ Suez Canal Authority.

Assuming that the Suez Canal all-water route resumes growth after the current recession ends, the Suez Canal is expected to have little impact on rail in Mississippi. The Mississippi Gulf ports would be unlikely to gain much traffic from expanded Suez Canal service, due to the longer sailing distance compared to East Coast ports. For example, the distance from Singapore by way of the Suez Canal is 10,524 nautical miles to Charleston, SC but 11,342 nautical miles to Gulfport. Assuming an average speed of 14 nautical miles per hour, using Charleston over Gulfport would save 58 hours. Also assuming truck or rail delivery from Charleston to Memphis takes approximately 48 hours, truck delivery from the East Coast could be completed prior to that same vessel arriving in Gulfport. In addition, if there is not sufficient containerized volume being handled at a port, vessel operators will not be able to generate enough revenue to profitably provide the port call service.

6.6.4 Impacts of All-water Service

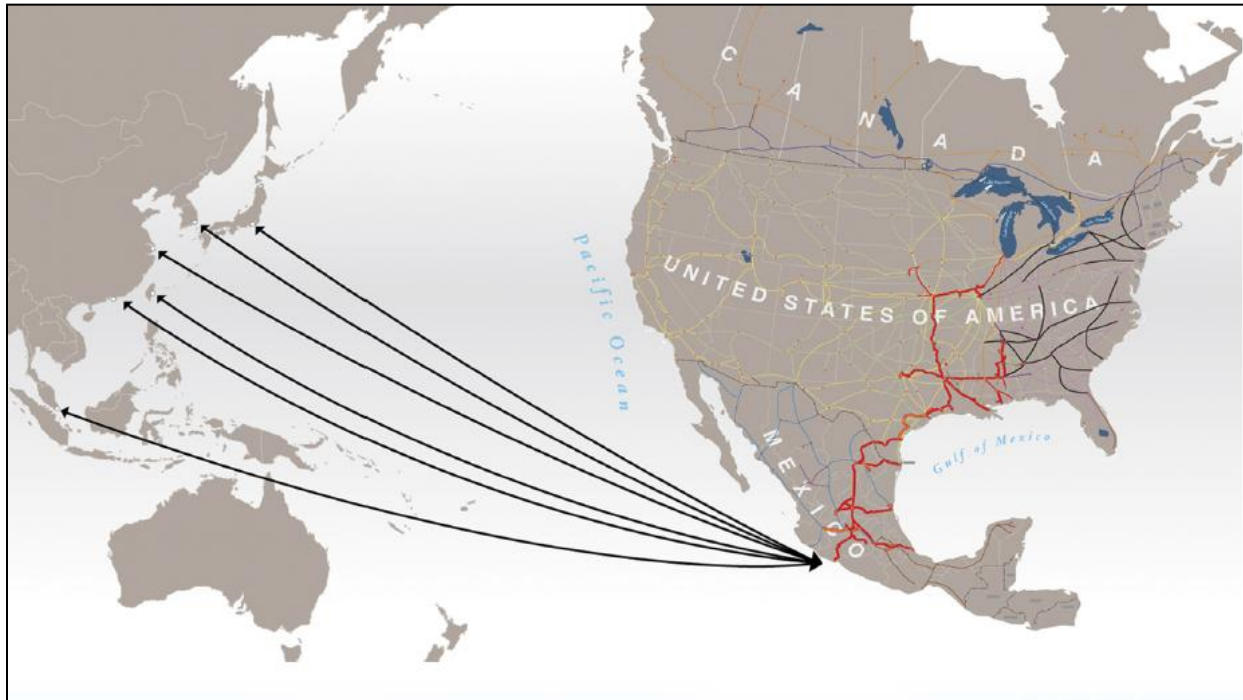
All-water service via either the Panama Canal or Suez Canal could adversely affect Memphis/DeSoto County logistics hubs by diverting traffic to logistics hubs that are in closer proximity to East Coast ports, such as Atlanta. It could also reduce through traffic on corridors such as the Meridian Speedway.

Equipment balance is an issue that will be influenced by the new all-water routes. Containers typically have to exit the country through the same port of entry to maintain a balanced equipment flow on trains and vessels. Increased all-water service via the Panama Canal and the Suez Canal will increase the number of containers arriving in the U.S. Midwest, Northeast, Southeast and Mid-South via East Coast and Gulf Coast ports. Increased inbound container flows via the Panama Canal and Suez Canal equates to fewer containers railed between SPBP and the Eastern markets. A negative impact of this will be fewer international containers available for export transit through the SPBP possibly driving up the cost in this overland rail lane. The positive impact will be the increased number of empty containers for export in the Southeast and Mid-South that must exit the U.S. via the Southeastern or Gulf ports through which they entered the U.S. This could possibly drive down the cost of exports through these ports and increase regional traffic. Ultimately, evolving market conditions in foreign markets will influence the commercial strategies of the ocean vessel operators and railroads affecting the balance of traffic through ports and on rail lanes.

6.6.5 Lazaro Cardenas

Another alternative route for Mississippi's Asian trade is to and from the Port of Lazaro Cardenas on Mexico's West Coast (**Figure 6-10**). The KCSM Railway (sister railroad to the KCS) operates a rail connection between the Port of Lazaro Cardenas and Nuevo Laredo on the Mexico/Texas border. After crossing the border at Laredo, TX, the KCS can provide service to points in Texas, the Southern and Midwest States as well as Mississippi.

Figure 6-10: Port of Lazaro Cardenas – Midwest and Southeast Trade Corridors



Source: KCSM

Currently, the Port of Lazaro Cardenas and KCS are actively working on the improvement of the Port, its rail terminal and the rail line that connects the Port to the Mexico/Texas border. Current facilities at the Port of Lazaro Cardenas can handle approximately 250,000 TEUs per year. The future development target is 10 million to 12 million TEUs per year.¹⁹

The Port of Lazaro Cardenas is closer to Mississippi than SPBP, but other than distance factors must be considered in a shipper's overall supply chain. In **Table 6-9** three routes are shown for a shipment to move from Shanghai to Houston, a common multimodal comparison point from where onward rail service can reach Mississippi. Shippers are mostly concerned with how quickly and consistently their freight can be delivered and have less concern about how many miles their freight has to travel. The duration comparison below does not include time required for customs clearance in ports or at borders, or vessel and rail-loading activities at ports or rail terminals.

- **Shanghai to SPBP to Houston:** This has the shortest ocean route. The inland rail move is the longest, but the rail move is on an established mainline with consistent and balanced service. Duration sensitivity for this route can result from port activities at SPBP.

¹⁹ Southeast Association of Rail Shippers, Weathering the Storm, available online at http://www.railshippers.com/regional/southeast/zidar_presentation.pdf.

Table 6-9: Comparison of Lazaro Cardenas to SPBP or All-water Service to Houston

Origin: Shanghai	Ocean Transport to Port		Rail Transport from Port to Houston		Combined	
Destination Port	Miles	Duration	Miles	Duration (miles/30 mph)	Miles	Duration
SPBP	6,500	14 days 336 hours	1,550	53 hours	8,045	389 Hours
Lazaro Cardenas (direct service)	8,000	15 days 360 hours	1,275	43 hours	9,275	403 Hours
Lazaro Cardenas (prior port calls)	8,000	18 days 432 hours	1,275	43 hours	9,275	475 Hours
Houston (via Panama Canal)	11,400	25 days 600 hours	0	0	11,400	600 Hours

Source: WSA; Free Map Tools, mileage estimates; Maersk Line, approximated shipping schedules, Professional Railroad Atlas, rail distances; American Association of Railroads, average intermodal speed.

- **Shanghai to Lazaro Cardenas to Houston:** This has a slightly longer ocean route with a shorter inland rail move. Two options are shown: the first option is for direct service to the Port of Lazaro Cardenas without any prior port calls; the second option increases the duration to show the impact of a port call prior to arriving at Lazaro Cardenas. Duration sensitivity for this route can result due to rail speed and consistency variations in Mexico and the border crossing at Laredo.
- **Shanghai to Port of Houston:** It is the all-water option to Houston via the Panama Canal. Duration sensitivity for this route can result to congestion at the Panama Canal.

The impact of Lazaro Cardenas on Mississippi is expected to be minor. The duration sensitivity of using Lazaro Cardenas compared to SPBP is minimal after considering possible duration impacts for customs clearance, port congestion, rail speed and other impacts like equipment availability and weather events. The all-water option through Houston eliminates the variability that could result from inland rail operations, however this route requires 5 to 10 days longer, which can have a significant impact on time-sensitive freight. The Lazaro Cardenas route does offer a new alternative for Mississippi's shippers seeking to diversify their "four corner" supply chain strategies. Ultimately a shipper's decision on which route to use will also be influenced by the rates and supporting supply chain services offered by the carriers.

Most of the Lazaro Cardenas traffic will be through traffic transiting across Mississippi on the KCS Vicksburg-Meridian Speedway destined for Birmingham, Atlanta or other Southeastern markets. Goods destined to Midwest markets will more likely travel via Kansas City instead of traveling through Mississippi.

6.6.6 Free Trade Agreements

The U.S. is entering into several free trade agreements with Latin American countries that could potentially increase rail traffic within Mississippi. The Central American Free Trade Agreement – Dominican Republic (CAFTA-DR) lowers tariffs on the majority of goods traded between the U.S. and Costa Rica, El Salvador, Guatemala, Honduras, Nicaragua, and the Dominican Republic. These trading partners are important to Mississippi's ports, particularly the Port of Gulfport. The U.S. also recently negotiated Free Trade Agreements (FTAs) with Colombia, Panama and South Korea. Data collected for the *Mississippi Trade and Transportation Assessment* indicates that Panama is the third largest importer of Mississippi's goods, valued at approximately \$420 million in 2009²⁰, and export volumes to Panama from Mississippi's two main ports grew by 887 percent between 2007 and 2009. While the impact of the Free Trade Agreement with Korea is expected to be minor, the impact of the FTA with Colombia should be more significant.

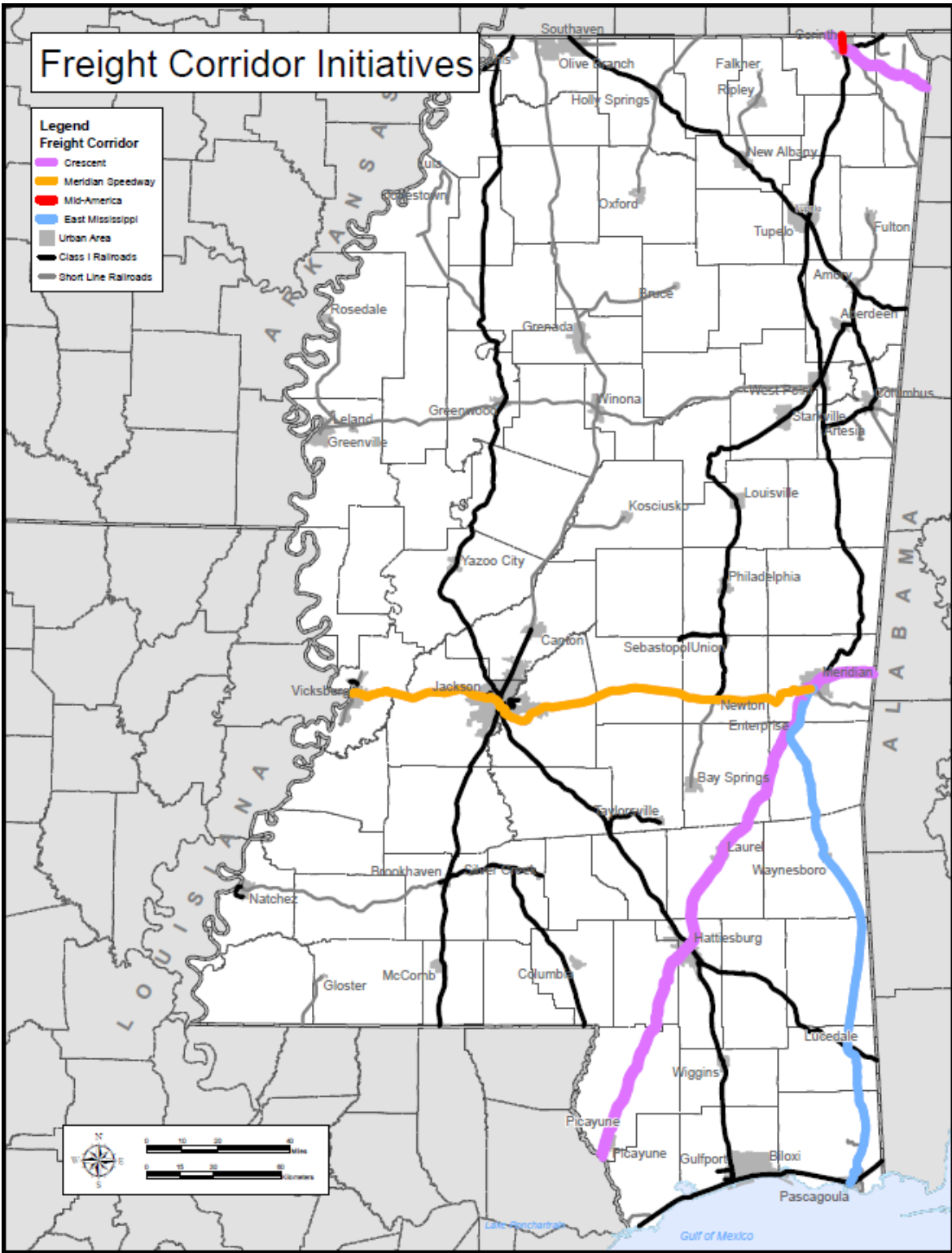
Each of these FTAs has the potential to increase Mississippi rail traffic, not only to and from the Ports of Gulfport and Pascagoula, but also to and from the Port of New Orleans. Commodities carried by rail that could see their volumes affected are *Wheat* and *Feed Grains*. If intermodal rail service were to be initiated at Gulfport, the increased Latin American trade could be a potential source of intermodal rail cargoes. Commodities such as *Frozen Poultry*, *Fruits*, and *Nuts*, which are less frequently carried by rail, could be converted to intermodal service reducing dependency on highway transport to the Ports.

6.6.7 Corridor Initiatives

With the resurgence of freight on the nation's railroads, the carriers have found themselves short of capacity in places while also experiencing changing freight types and movements. Approaches to solutions or at least mitigations of problems have resulted in the railroads willing to explore opportunities to increase capacity while simultaneously promoting more efficient operations by involving other carriers and the public sector. Such efforts have resulted in joint projects that have been widely publicized like the Alameda Corridor serving the Ports of Los Angeles and Long Beach, and Chicago's CREATE project to reduce congestion and improve travel times through the city. The railroads are also involved in a number of corridor initiatives in Mississippi described below and graphically presented in **Figure 6-11**.

²⁰ Office of the United States Trade Representative, *State Specific Benefits*: <http://www.ustr.gov/about-us/benefits-trade/state-specific-benefits>.

Figure 6-11: Rail Corridor Initiatives in Mississippi



6.6.7.1 Meridian Speedway

The Meridian Speedway is the KCS route between Meridian and Shreveport, Louisiana. The portion of it lying in Mississippi and extending to Shreveport is owned by the Meridian Speedway, LLC (MSLLC), a joint venture by the Kansas City Southern Railway and the Alabama Great Southern Railway (AGS), an NS subsidiary that was approved by the STB in 2006. Also involved is less than a mile of CN trackage in Jackson over which KCS has trackage rights. The KCS, which contributed its 320-mile route between the two points, has a majority interest, and NS, to contribute \$300 million over time principally for capital improvements to increase capacity and reduce running times, has a minority interest. The NS has trackage rights over MSLLC as well as over KCS from Shreveport to Dallas, Texas thus extending its network further west. Eventually as many as 45 trains per day may use the Corridor²¹.

6.6.7.2 MidAmerica Corridor

A 2009 CN-NS track sharing initiative that also involves short line West Tennessee Railroad (WTNN) will provide shorter and faster routing for both Class I railroads between the Midwest and Southeast. This initiative is called the MidAmerican Corridor, illustrated in **Figure 6-12**. NS tracks will be used between Chicago and St. Louis, CN tracks between St. Louis and Fulton, Kentucky. In addition, the initiative includes a haulage agreement over CN for NS traffic between Chicago and Fulton. The WTNN will be upgraded and used between Fulton and Corinth, providing access over NS to the Southeast. A specific objective is to open a new gateway for Illinois Basin Coal (Illinois, southwestern Indiana, and western Kentucky) to reach Southeastern utilities.

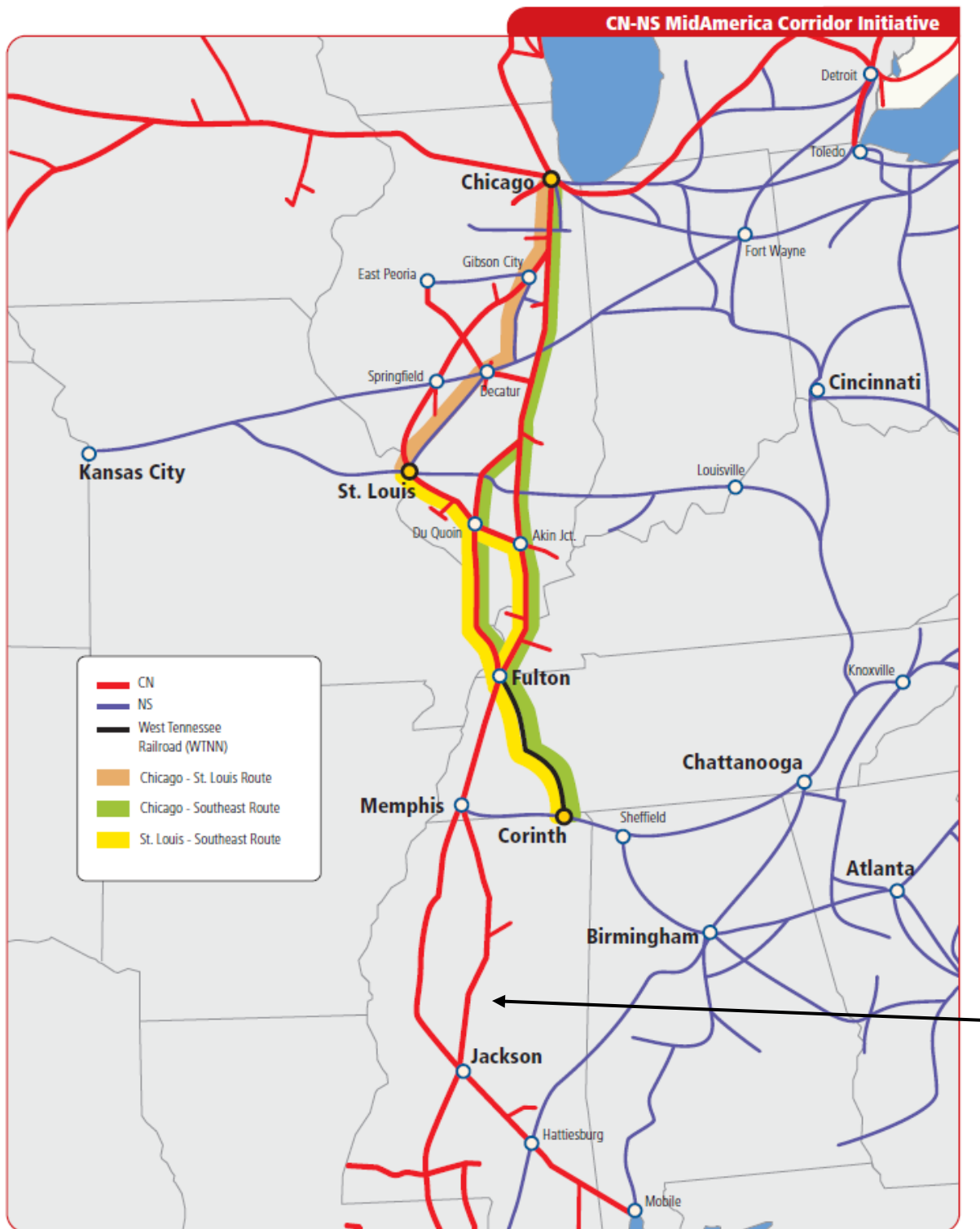
The more eastern CN line between Jackson and Memphis seen in Figure 6-12 has been sold to a short line railroad.

6.6.7.3 Crescent Corridor

This initiative is a \$25 billion, nine-state, and 2,500 mile network designed principally for intermodal traffic between New Orleans and Newark, New Jersey that NS has been promoting as a public-private partnership since the early 2000s. The corridor has several components including routes and terminals shown on **Figure 6-13**. In Mississippi both of the NS main track routes are involved and the Meridian Speedway, LLC will be a connecting corridor. While there are no terminals proposals in Mississippi, new terminals in Memphis (Rossville) and Birmingham (McCalla) are nearby. The two terminals are recent recipients of \$52.5 million TIGER II grants each. Mississippi was one of six states joining NS as applicants for the grant. Track improvements will be made on the corridor in Mississippi.

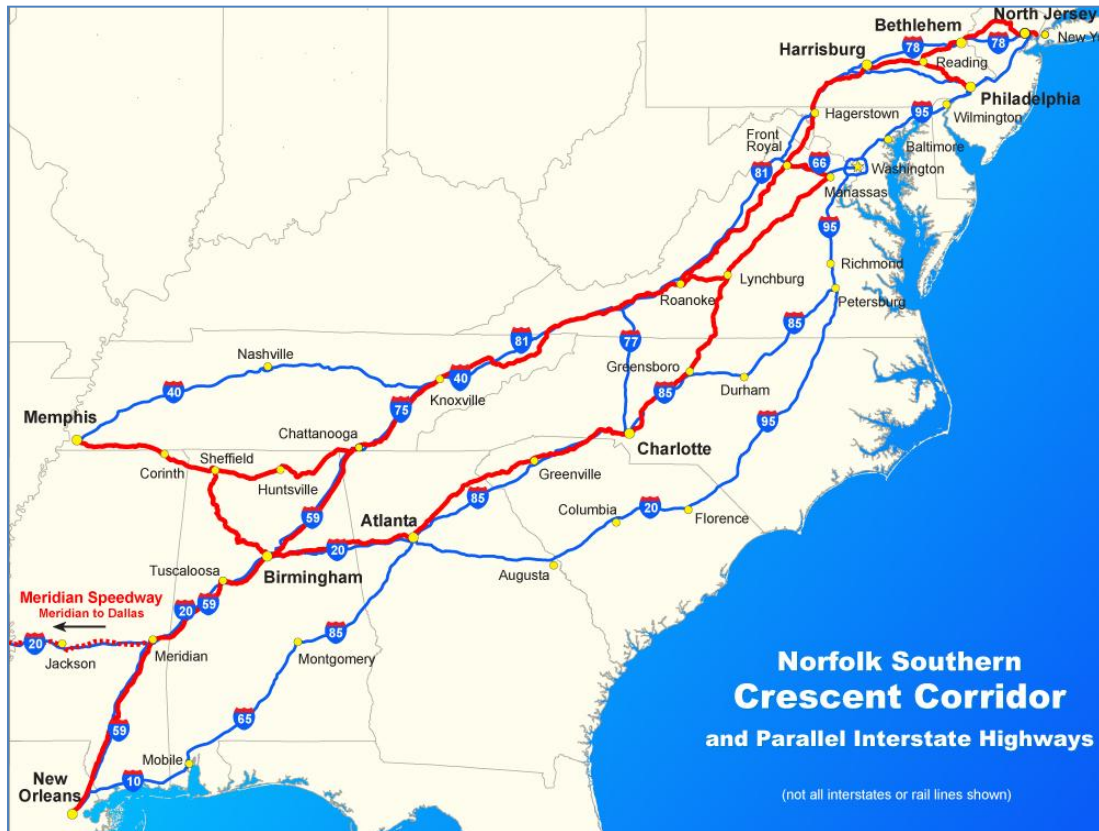
²¹ <http://www.kcsouthern.com/en-us/media/meridian-speedway.aspx>.

Figure 6-12: CN-NS MidAmerica Corridor



Source: Canadian National Railway, <http://www.cn.ca/en/media-news-MidAmerica-Corridor-20090210.htm>

Figure 6-13: NS Crescent Corridor



Source: Norfolk Southern Railroad, <http://www.thefutureneedsus.com/crescent-corridor/state-profiles/mississippi/>

6.6.7.4 East Mississippi Intermodal Rail Corridor

An initiative of the Rail Authority of East Mississippi (RAEM) proposes to link Meridian and Pascagoula with a 152-mile-long corridor that would connect with four of the state's five Class I railroads. The Corridor is comprised of three distinct segments: the Meridian Southern Railway (MSD) between Meridian and Waynesboro; a new link of 56 miles between Waynesboro and Evanston (near Lucedale), a portion of which would be a reconstruction of an abandoned line; and the Mississippi Export Railway (MSE) running between Evanston and Pascagoula. RAEM submitted an application for a \$226 million TIGER grant for the project.

A preliminary examination of market potential²², however, concluded there was little demand for overhead movements. There was demand for significant volumes of wood products for export and generation of energy, namely, wood pellets in the case of the former and wood chips for the latter. Recommendations were made to conduct a more thorough evaluation of the identified market potentials and necessary railroad agreements.

²² *Preliminary Market Feasibility Assessment* prepared for the Rail Authority of East Mississippi by Waggoner Engineering, Inc, June 2010.

6.6.8 Summary of Structural Change Impacts

Most of the structural changes discussed in this section will impact through traffic crossing Mississippi, but will not likely have an appreciable impact on rail traffic originating or terminating within the State. Developments such as the all-water routes through the Panama Canal or the Suez Canal may eventually decrease land-bridge rail movements passing through Mississippi. Improvements at the Port of Lazaro Cardenas may provide an option to using SPBP for Mississippi shippers. Free Trade Agreements may boost the port traffic traveling between Mobile, New Orleans, and Gulfport across the State to points to the north. The NS Crescent Corridor may increase traffic passing through Mississippi between New Orleans and points Northeast.

7. FREIGHT RAIL INTERMODAL ASSESSMENT

7.1 Introduction

This section describes the intermodal shipping options available for Mississippi rail users. While the term intermodal most commonly refers to the movement of containers and trailers by rail transferred to/from other modes, principally marine vessels and trucks, the term actually applies to any transfer of freight between transportation modes. Although there is only one railroad-operated container/trailer transfer facility in Mississippi, there is no shortage of intermodal rail use with transfers of carload freight between both highways and waterways as revealed in the following discussion.

7.2 Port-Rail Interface

With three commercial waterways in the state, there are numerous ports handling both barges and deep-draft vessels. Of the State's 16 water ports, four are associated with the Gulf of Mexico, six with the Mississippi River, and six lie along the Tennessee-Tombigbee (Tenn-Tom) Waterway. Twelve are rail served, and one is planning for rail service.

The largest ports in the State as measured by cargo handled at both public and private port terminals are Pascagoula and Gulfport. They are also the State's only ports capable of receiving deep draft vessels. Pascagoula is the largest port in the State, and Gulfport is the only deep water container port in the State with the number of TEUs²³ generated just below neighboring New Orleans and greater than Mobile. Some of the river ports are involved in container-on-barge (COB) services.

The ports are multimodal in nature, but they are also involved in the development of industrial properties that in most cases, especially relative to the river ports, generate much greater transportation demand than the port terminals themselves. Thus, while each port plays a role in the State's intermodal system facilitating water and land cargo transfers, many are more industrial development tools than intermodal facilities *per se*, and carload freight is the rule rather than containers that are more commonly associated with intermodal transport.

The State's rail-served water ports are listed in **Table 7-1** and graphically depicted on **Figure 7-1**.

Additional discussion of each port, including its rail service and rail needs, follows grouped by waterway system.

²³ TEU stands for twenty-foot equivalent unit, or a small marine container.

Table 7-1: Mississippi Rail-Served Water Ports

Port	Associated Waterway Group	Serving Rail Carrier ⁽¹⁾
Aberdeen ²⁴	Tenn-Tom	KCS
Amory	Tenn-Tom	BNSF
Bienville	Gulf of Mexico	PBVR
Greenville	Mississippi	CAGY
Gulfport	Gulf of Mexico	KCS, CSXT
Itawamba	Tenn-Tom	MSRW
Lowndes County	Tenn-Tom	KCS, CAGY
Natchez	Mississippi	NTRZ
Pascagoula	Gulf of Mexico	MSE, CSXT
Rosedale	Mississippi	GTR
Vicksburg	Mississippi	VSOR
Yazoo County	Mississippi	CN
Yellow Creek	Tenn-Tom	KCS

Note:

(1) Reporting marks for railroads. Proper names appear in text below.

7.2.1 Gulf Coast Ports

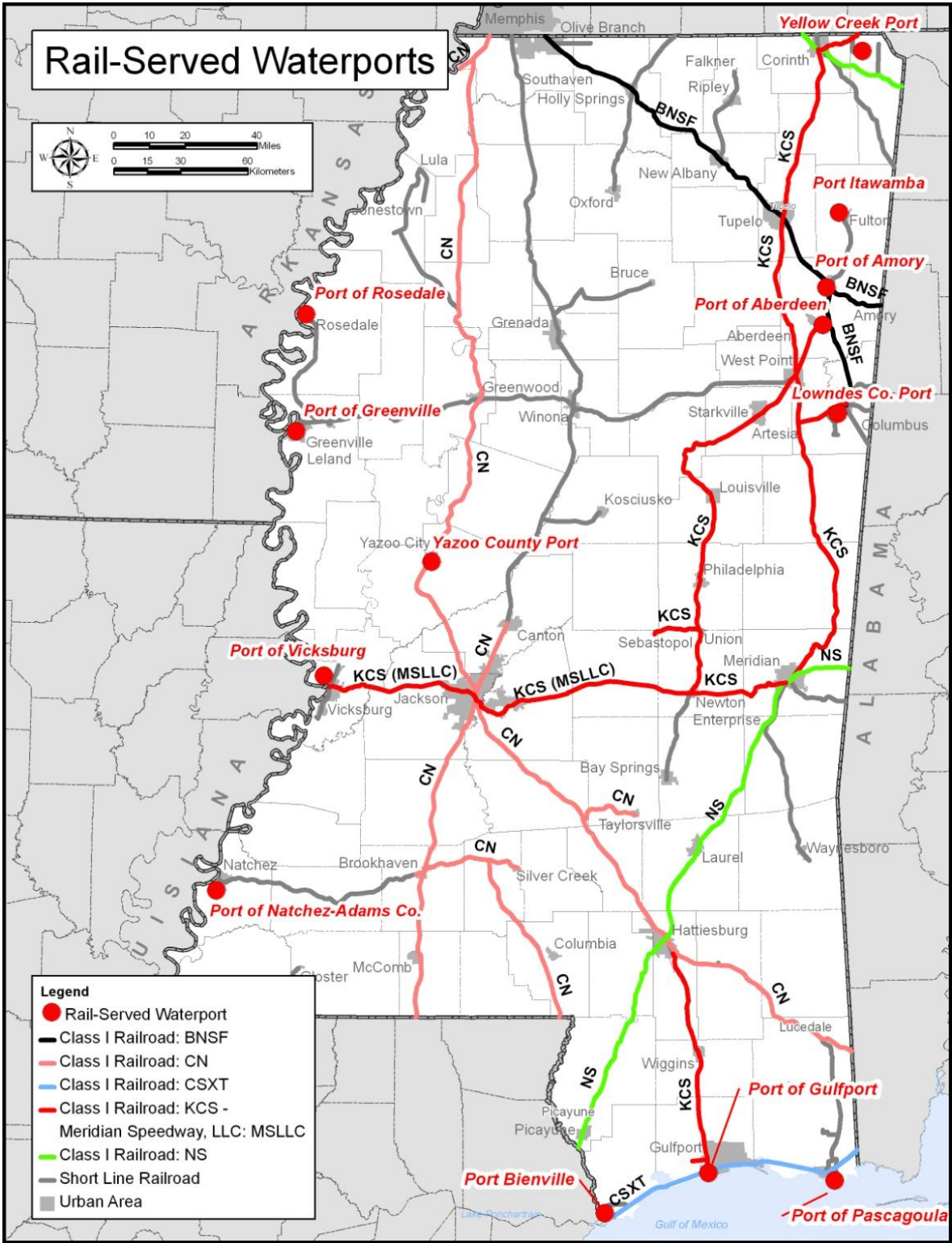
7.2.1.1 Port of Bienville

The Port of Bienville is owned and operated by the Hancock County Development Commission. The Port and adjoining industrial park (3,600 acres) are served by the Port Bienville Railroad (PBVR). The railroad has a gross carload weight capacity up to 286,000 lbs. and storage capacity of 429 cars. It is connected to CSX Transportation (CSXT) five miles away from the Port at Ansley.

A major near-term priority is replacement of the CSXT Bridge over the Pearl River at Mile 1.0 near English Lookout. The Pearl River would be the most direct route to the Port from the Gulf Intracoastal Waterway, but the narrow passage and the location within the river bend makes it impassable for barge traffic. The alternate route through the Rigolets and Little Lake is longer, includes a difficult turn for barges, requires dredging (at the Port's expense since it is not a U.S. Army Corps of Engineers [USACE] responsibility), and takes the route through Louisiana waters, complicating permitting processes. Although the USACE has not maintained the depth at the mouth of the Pearl River, it is under USACE jurisdiction if barge traffic were to resume in that channel.

²⁴ Planned rail service; no existing rail service.

Figure 7-1: Marine, River and Waterway Ports in Mississippi



Another near-term priority is development of a new rail connector from Port Bienville to the Norfolk Southern Railway (NS) near Picayune that will also provide access to the Canadian National (CN) in Hattiesburg.

7.2.1.2 Port of Gulfport

The Port of Gulfport is owed by the State and governed by the State Port Authority. The Port was the Gulf Coast's third largest container port prior to Katrina handling 200,000 TEUs. It has direct rail service provided by Kansas City Southern Railway (KCS) with a CSXT connection, and has access to CN via a haulage agreement over KCS. The Port has six tracks with total length of two miles serving both east and west terminals. Future expansion of the Port to the south by filling some 500 acres is being investigated.

In 2010, a public-private partnership between the Mississippi State Port Authority and the Kansas City Southern Railway (KCS) was awarded a TIGER I Grant from the federal government providing \$20 million of a \$50 million project to upgrade rail service to the Port of Gulfport. The improvements include the following:

- Upgrade 76.5 miles of rail line to accommodate 49 mile-per-hour double-stack intermodal service;
- Improve and add sidings;
- Install new turnouts; and
- Rebuild and improve existing road crossings and bridges.

While current rail use at the Port is relatively low, increased use of rail as a means to reduce the number of trucks on area highways is a goal of the Port.

7.2.1.3 Port of Pascagoula

The Port of Pascagoula, the largest port in the State, is owned by the Jackson County Port Authority. The Port is served by the Mississippi Export Railroad (MSE) and CSXT. MSE is a 42-mile north-south carrier connecting CSXT at Pascagoula and CN at Evanston (near Lucedale). MSE's track and roadbeds are maintained to accommodate unit trains and thus modern day carloadings. An extensive network of trackage provides rail service at both the Pascagoula River and Bayou Casotte Harbor public terminals as well as a number of private terminals. Near-term rail needs relate to full development of the Pascagoula River South Terminal. The Port has access to 385 acres of industrial property.

7.2.2 Mississippi River Ports

7.2.2.1 Port of Rosedale

The Port of Rosedale-Bolivar County Port Commission purchased a branch line from the Illinois Central Gulf Railroad (now CN) in 1981 that became the Great River Railroad (GTR). The railroad interchanges with the Columbus and Greenville Railway (CAGY) outside of Greenville,

at Metcalfe. However, GTR has been out of service for 10 years. The Port Commission desires to rehabilitate the 32.45-mile-long rail line by improving the infrastructure as needed. The estimated cost is yet to be determined.

7.2.2.2 Port of Greenville

The Port of Greenville is owned by Washington County and operated by the Greenville Port Commission. Rail service is provided by CAGY. Since 2008, the Port has been improving its rail facilities. In 2008 and 2009, the port installed two new rail crossings. The planned improvements for 2010 include improving and expanding the length of the line to eventually increase track capacity to 45 cars at an estimated cost of \$410,000. Industrial properties of 700 acres are accessible. The Port also needs a trackmobile to facilitate port switching as well as rehabilitation of 3.2 miles of track that were flood damaged in 2008 that need additional improvements.

7.2.2.3 Port of Vicksburg

The Port of Vicksburg is owned by Warren County and is operated by the Warren County Port Commission. Rail service is provided by the Vicksburg Southern Railroad (VSOR) that operates over three spurs totaling three linear miles of track owned by the Port including a loop track located at a barge terminal with direct access to loading docks for transshipping between barge, truck, and rail. VSOR connects with the KCS in Vicksburg and the KCS-NS Meridian Speedway (MSLLC) running between Meridian and Shreveport via the only rail crossing the Mississippi River between Memphis and Baton Rouge.

Currently the Port is upgrading its existing rail trackage with an estimated need of \$50,000 to complete. The Port authority is also considering establishing a new port terminal, as the existing Port facility is running out of capacity.

7.2.2.4 Port of Natchez

The Port of Natchez, owned by Adams County and operated by the Natchez-Adams County Port Commission, is served by the Natchez Railway, LLC (NTZR) which connects and interchanges with the CN at Brookhaven. There are three rail spurs at the Port with six miles of total length. There is also an on-site rail siding at the south dock.

Long term, a rail extension at the bulk cargo dock is needed as is rail access south of the Port.

7.2.2.5 Yazoo County Port

The Port of Yazoo County, located on the Yazoo River that feeds into the Mississippi, is owned by Yazoo County and operated by the County Port Commission. It is directly served by the CN via a two-and-a-half-mile lead track owned by the railroad with spurs to multiple businesses. The trackage needs rehabilitation and rebuilding of grade crossings, the latter estimated to cost \$300,000.

7.2.3 Tenn–Tom Waterway System

7.2.3.1 Yellow Creek Port

The Yellow Creek Inland Port is served by the KCS, which operates over the 10-mile-long Yellow Creek Port Railroad (YCRK) controlled by the Yellow Creek Inland Port Authority. The railroad connects with the KCS branch running between Corinth and Counce, Tennessee.

Port rail needs consist of construction of a three-mile rail lead from the NS main line to the container-on-barge distribution port terminal in the 907-acre Northeast Mississippi Waterway Industrial Park (NEMWIP) near Burnsville (the Port has access to industrial properties totaling 2,500 acres). The Port also needs rehabilitation of the YCRK that connects the Port to the KCS rail system; rehabilitation will consist of replacing ties, surfacing and grade crossing renewals. Both needs were the subject of TIGER Grant applications, with the cost of the new three-mile connection to the NS estimated at \$4.1 million and the YCRK rehabilitation at \$2 million.

7.2.3.2 Port of Itawamba

The Port of Itawamba, owned and operated by the Itawamba County Port Authority, is served by the Mississippian Railway Cooperative (MSRW), operated by on-line Homan Industries and connects and interchanges with the BNSF Railway 25 miles away in Amory. There are three rail spurs at the Port with a total length of 9,000 feet.

The issue with rail access is that the short line has a 263,000-lb. carload weight capacity instead of the modern carloading capability of 286,000 lbs. Therefore, rehabilitation of the MSRW from Fulton to Amory is needed with a probable project cost, as contained in a TIGER Grant application, of \$10.4 million.

7.2.3.3 Port of Amory

The Port of Amory, owned by the City of Amory, has on-port rail service provided by BNSF Railway via a 7,200-ft. connection track with the BNSF main line. The City is planning to add an additional 600 feet of length to the lead track in fiscal year 2011. Long range, development of the industrial property south of US 278, including extension of the lead track, is planned. Increasing the amount of industrial property with access to rail (325 acres are available) will increase the use of rail at the Port. The Port also has an interest in seeing the carload weight limitation on the BNSF line between Amory and Columbus increased from 263,000 lbs. to 286,000 lbs. The improvements are estimated to cost \$4.5 million.

7.2.3.4 Port of Aberdeen

The Port of Aberdeen is owned and maintained by the City of Aberdeen. Currently, there is no rail service at the Port, but the Port has plans to build a 3.2-mile-long connection track, which is already underway with land acquisition completed. A TIGER Grant application contained a probable cost of \$5.2 million.

7.2.3.5 Lowndes County Port

The Lowndes County Port is owned, operated and maintained by the County and has terminals on both east and west banks of a slack-water harbor connecting with the Tenn-Tom Waterway. Rail service is provided by KCS and Columbus and Greenville Railway (CAGY) over a 2,900-ft. on-terminal rail spur on the east bank of the Port with connections available with many of the other five rail carriers in the city of Columbus. One of the port terminals has a direct barge-rail-truck transload container facility.

Developing a rail spur to the west terminal has been included in the Port's Long Range Plan. Planned expenditures amount to \$150,000 to rehabilitate the east rail spur and scale with another \$300,000 for engineering/environmental planning and acquisition of right-of-way for a west bank rail connection. Probable project costs for the latter contained in a TIGER Grant application totaled \$5.6 million.

7.2.4 Port-Rail Summary

While Class I railroads (the large rail systems, such as BNSF, KCS, etc.) directly serve several of the aforesaid ports, the majority are dependent on local or regional carriers to provide access to the national rail system through their connections to the Class I railroads. The quality of service provided by local and regional carriers depends in large part on their Class I connections.

7.2.4.1 Service Ratings

In a survey conducted for the Long Range Transportation Plan, several Ports rated their rail service fair or good. There were very few ratings in either extreme category as shown in **Table 7-2**. Operating/service issues involve rates, carrier competition, service schedules, and flexibility in carrier dealings.

Table 7-2: Port Rail Service Rating Summary

Factor	Rating			
	Poor	Fair	Good	Excellent
Time Reliability	1	2	4	1
Cost	1	4	1	
Loss and Damage		1	5	1
Equipment Availability		3	4	1
Service Flexibility		4	3	1

Notes:

1. Eight of 12 ports with existing rail service responded to rating request.
2. All ports did not rate cost.
3. Scoring: 1 for Poor, 2 for Fair, 3 for Good and 4 for Excellent.
4. The overall weighted average rating is 2.4.

7.2.4.2 Port Rail Needs

As noted earlier, 12 Mississippi ports are rail served, and one is planning for rail service. All 13 ports have rail infrastructure needs such as the track rehabilitation and expansion projects

summarized in **Table 7-3** along with estimated costs. Expenditures for needs that have been defined and costs estimated (probable cost) would total \$62.4 million, including the \$30 million for the Gulfport-Hattiesburg line still needed after deducting the \$20 million TIGER grant. The costs related to the 11 other proposed projects are yet to be determined.

7.3 Truck-Rail Interface

Currently there is only one railroad-operated trailer/container intermodal facility in Mississippi. Also, there is only one bulk transfer facility. However, there are several facilities located in neighboring states that can serve Mississippi shippers.

7.3.1 Mississippi Intermodal Facilities

The only active intermodal rail-highway trailer-container facility within the State is located in Richland near Jackson. The terminal is a joint facility used by CN and KCS and is located adjacent and connected to the KCS High Oak Yard. Terminal operations are provided by KCS. It is located on 85 acres with an annual capacity of approximately 90,000 lifts per year and onsite storage for 300 containers. Containers are placed onto or taken off trains by the facility's single crane or one of its three side lifts.

7.3.2 Accessible Intermodal Facilities

The lack of trailer/container transfer facilities in Mississippi does not mean that the State's businesses do not have access to them. There are several located in neighboring states that lie within typical dray distances from many locations within the State. **Figure 7-2** depicts the location of the facilities, including Jackson, and reveals the area in Mississippi lying within a 100-mile radius²⁵ of each. As shown by the graphic, there are only limited areas that do not meet the criterion and require only slightly longer drays. Longer drays are acceptable depending on the length of the rail haul.

7.3.2.1 Memphis Area Facilities

Memphis, a major gateway between the east and west, which lies on the Mississippi-Tennessee border and is convenient to rail users in northern Mississippi, and has seen a rapid expansion of intermodal facilities. BNSF undertook a \$200 million upgrade at its Tennessee Yard (now Memphis Intermodal Facility). In 1998 UP opened a regional intermodal yard across the Mississippi River in Marion, Arkansas. CN and CSXT opened a joint terminal in 2005, the Intermodal-Gateway Memphis, near downtown. NS has also announced and progressed plans to build a \$112 million intermodal terminal in Rossville (25-30 miles east of Memphis) in Fayette County, Tennessee.

²⁵ "...the normal intermodal dray is under 100 miles...", NCHRP Report 586, *Rail Freight Solutions to Roadway Congestion-Final Report and Guidebook*, prepared for the Transportation Research Board by Global Insight, Economic Development Research Group, Massachusetts Institute of Technology, and Wilbur Smith Associates, 2007, p.72.

Table 7-3: Mississippi Port Rail Needs Summary

Port	Serving Railroad	Identified Need	Statement of Problem	Estimated Project Cost
Aberdeen	KCS	Construction of a 3.2-mile-long connection track.	Currently without rail service.	\$5,200,000 ⁽¹⁾
Amory	BNSF	Extend railroad lead track south of US 278 bridge.	South end of port industrial property lacks rail access.	TBD
		Upgrade 12 railroad bridges located between Amory and Columbus on line operated by BSNF. Proposed upgrades would increase the load-carrying capability to the industry standard 286,000 pounds.	Port is not transloading the maximum carload capacity to rail.	\$4,500,000 ⁽¹⁾
Bienville	PBVR	Connection to NS.	Rail access limited to CSX Transportation.	TBD
		Replacement of CSXT bridge over Pearl River.	Narrow passage and bridge location restricts barge traffic and loss of most direct route.	TBD
Greenville	CAGY	The Port plans to improve and extend trackage to hold additional rail cars.	Insufficient car capacity.	\$410,000
		Acquire a track mobile.		TBD
		Rehabilitate 3.2 miles of on-site flood-damaged track.		\$5,000,000
Gulfport	CSXT, KCS	Improve rail line between Gulfport and Hattiesburg.	Restricted operating speeds, clearances and capacity.	Total cost: \$50,000,000; \$20,000,000 TIGER Grant obtained.
		Develop rail access directly into port facility.	Direct access to CSXT	TBD
Itawamba	MSRW	Rehabilitate 23 miles of rail line from Fulton to Amory to handle 286,000-lb. carload weights.	Port is not able to interchange industry standard carloads.	\$10,400,000 ⁽¹⁾
Lowndes	KCS	Engineering/environmental planning and land acquisition for west bank rail connection track.	West bank terminal without rail service.	\$300,000 (in budget) ⁽²⁾
		Rehabilitation of east bank trackage and scale.		\$150,000 (in budget)
Natchez	NTRZ	Extend rail on the bulk cargo handling dock.		TBD

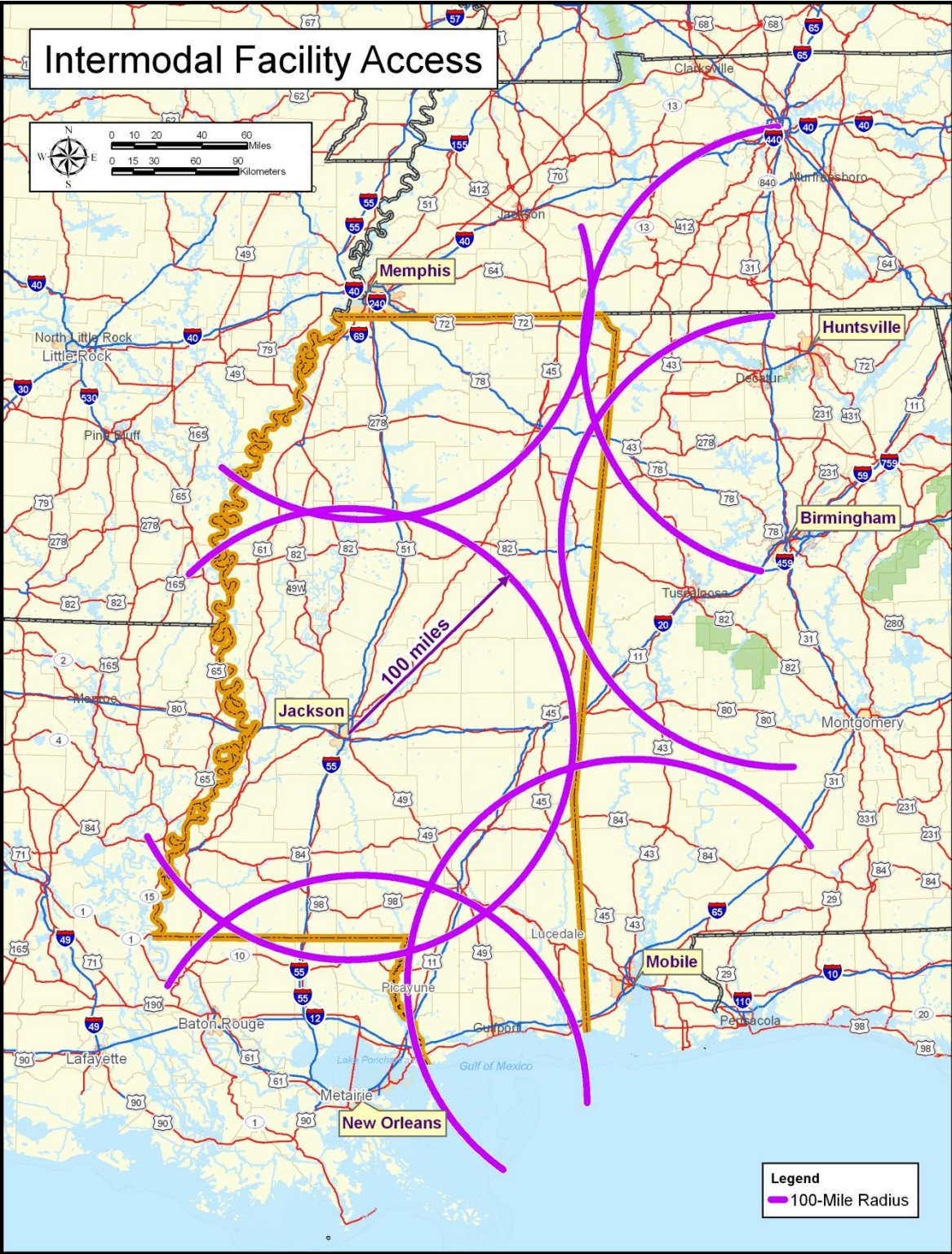
Port	Serving Railroad	Identified Need	Statement of Problem	Estimated Project Cost
		Build a rail extension to the south of the Port.		TBD
Pascagoula	MSE, CSXT	Rail access for new South Terminal development.	Needed for full infrastructure development.	TBD
Rosedale	GTR	Rehabilitate 32.45 miles of Port Commission owned railroad as needed.	Railroad has been out of service since 2002.	TBD
Vicksburg	VSOR	Establish a new port terminal with rail access.	Vicksburg is currently out of space.	TBD
		Vicksburg is in the process of upgrading existing rail trackage.	Upgrade not yet complete.	\$50,000
Yazoo	CN	Resurface grade crossings.		\$300,000
		Rehabilitation of trackage.		TBD
Yellow Creek	KCS	Rehabilitation of the 10-mile Yellow Creek Railroad that connects Yellow Creek State Inland Port to the KCS system.	Needs timbering and surfacing with grade crossing renewal	\$2,000,000 ⁽¹⁾
		Construct a 3-mile rail connection from the NS main line to the container-on-barge distribution port terminal in the Northeast Mississippi Waterway Industrial Park (NEMWIP).	Expand economic development capacity at Port.	\$4,100,000 ⁽¹⁾

Notes:

(1) Rounded from TIGER Grant application opinion of probable cost.

(2) Total project probable cost rounded from TIGER Grant application is \$5,560,000.

Figure 7-2: 100-Mile Drays from Intermodal Facilities Serving Mississippi



Memphis Intermodal Facility - BNSF finished expanding its Memphis Intermodal Facility in April, 2010. The renovation enlarged the facility from 35 acres to 185 acres and increased the annual capacity from 250,000 lifts a year to nearly 600,000, with the ability to increase the number of lifts to one million with the addition of parallel tracks and cranes in the future. For all the renovations made at the site, however, the biggest change came with the arrival of eight new rail-mounted, wide-span gantry cranes. The cranes are much larger than traditional intermodal cranes. They span six tracks and three truck lanes and thus are capable of much greater throughputs.

CN/CSXT-Intermodal Gateway - This facility, opened in 2005, is located in the 3,000-acre Frank C. Pidgeon Industrial Park in southwestern Memphis. The 155-acre terminal, situated on a 250-acre site, has a lift capacity of 200,000 trailers/containers per year. It is jointly used by CN and CSXT, and operated by a contract operator, ITS

Norfolk Southern - Forrest Yard - NS has the smallest intermodal terminal in the Memphis area, covering 50 acres with an annual lift capacity of 123,000. However, NS intends to construct a new facility in southwest Fayette County, as mentioned earlier. The proposed facility will encompass 570 acres with a capacity of 327,000 annual lifts. NS will end intermodal activity at Forrest Yard with construction of the Rossville intermodal facility for which the railroad just received a \$55 million TIGER Grant as a component of the carrier's Crescent Corridor.

Union Pacific Railroad - Marion, AR - Opened in 1998 and located just across the Mississippi from Memphis, the UP Marion Intermodal Facility occupies 600 acres and can handle approximately 375,000 lifts per year. The facility has five cranes and six side cranes in operation with parking capacity for 2,607 trailers.

7.3.2.2 Birmingham, AL Area Facilities

BNSF Railway, CSXT and the Norfolk Southern operate small to mid-size facilities in the Birmingham area.

BNSF – Birmingham - BNSF operates a small intermodal facility in Birmingham. At the present time, the only service offered at this facility is to or from Los Angeles and Oakland, CA.

CSXT Central Alabama Intermodal Container Transfer Facility – Bessemer - Opened in September, 2009 and located 15 miles southwest of Birmingham, this \$6 million hub operates on 25 acres. CSXT has an option to develop 25 additional acres. The facility has 5,000 feet of working track, parking for 1,000 stacked 40-foot containers and 307 40-foot containers on truck chassis. It can move up to 40,000 containers annually although the current throughput is approximately 12,000 containers per year.

Norfolk Southern - Birmingham - NS currently operates a small facility with limited service in Birmingham, but NS announced in July of 2009 that it intends to construct the Birmingham

Regional Intermodal Facility, a new 316-acre intermodal terminal in McCalla, adjacent to Jefferson Metropolitan Park. This new facility would be part of the railroad's multi-state Crescent Corridor program to establish a high speed intermodal freight rail route linking the Gulf Coast and the Northeast. A TIGER Grant of \$52.5 million has been received to progress construction of the facility, which is expected to open in late 2012.

7.3.2.3 Mobile, AL – Intermodal Transfer Container Facility

The Berth 2 container terminal at the Port of Mobile was performing approximately 95,000 lifts per year, well above its estimated capacity of 75,000 per year. In response to the growing demand, plans were made to construct a new container terminal and accompanying intermodal container transfer facility (ICTF).

The Port opened Phase 1 of the Mobile Container Facility in 2008, and has begun construction of the first phase of its Garrows Bend ICTF. The Port is currently served directly by CN, CSXT and NS and indirectly by BNSF and KCS – BNSF over its regional carrier affiliate Alabama and Gulf Coast Railway (AGR), and KCS via a haulage rights agreement with CN. Both CN and CSXT will have direct access to the ICTF and the others via the Terminal Railway Alabama State Docks (TASD), which is owned and operated by the Port Authority. The ICTF will have a total capacity of 350,000 TEUs per year. When fully built out it will handle both domestic and marine containers.

Another intermodal service is available in the Port of Mobile offered by the CG Railway, Inc., a US-Mexico rail ferry operating approximately 900 miles between the Port and Coatzacoalas, Mexico. A double-deck loading facility is served by TASD. The facility provides access for all of the rail carriers reaching Mobile. The service operates with two double-deck ferries, each with the capacity to hold 115 railcars.

7.3.2.4 Huntsville International Intermodal Center Facility (Huntsville, AL)

The Port of Huntsville is an inland port comprised of three operating entities of the Huntsville-Madison County Airport Authority – the Huntsville International Airport, the Jetplex Industrial Park and the International Intermodal Center. This modern intermodal complex provides Huntsville with state-of-the-art-aviation, railroad and ocean connectivity. The rail terminal of the Intermodal Center currently uses two gantry cranes on the 45-acre location that are capable of 114,000 lifts per year. The terminal is operated by Airport employees with NS providing line-haul transportation service for both domestic and international containers. Huntsville is located on the Chattanooga-Memphis leg of the NS Crescent Corridor.

7.3.2.5 New Orleans

New Orleans, another major east-west gateway, is served by six Class I railroads: BNSF, CN, CSXT, KCS, NS, and UP. Each railroad, except KCS, operates an intermodal facility there.

Canadian National - Mays Yard - Yard space is limited and requires continuous switching of railcars. The containers are loaded/unloaded with reach stackers. The CN's U.S. primary intermodal service operates between New Orleans and Chicago.

Union Pacific - Avondale Terminal - With a lift capacity of 65,000 trailers/containers a year, this is one of UP's smaller intermodal terminals. It has a storage capacity of 770 trailers/containers on chassis, and lifts are made with two side lift loaders.

BNSF Railway - Westwego Yard - This is one of the smaller intermodal facilities on the BNSF intermodal network.

CSXT - Gentilly Yard - The CSXT Gentilly Yard is a major classification and interchange yard on that railroad's system, but the intermodal facility is comparatively small. Intermodal service is limited to service between the terminal and Florida and Philadelphia.

Norfolk Southern - Oliver Yard - This 18-acre site has a lift capacity 80,000 trailers/containers per year with a parking/storage capacity of 260 trailers and containers on chassis.

7.3.3 Other Rail-Truck Intermodal Facilities

There are numerous intermodal facilities other than those that transfer containers and trailers between rail and truck. Freight moving in conventional railcars is also subject to transloading. Rail-hauled commodities are transferred to or from trucks to permit businesses that do not have their own rail spurs to take advantage of the long-haul efficiencies of the rail mode. As extra handling entails additional costs, such operations are competitive for traffic where the rail versus truck line-haul cost differentials are significant enough to justify the transload costs. This typically results when high-density products or very long hauls are involved.

7.3.3.1 Team Tracks

"Team tracks" are perhaps the earliest example of intermodal freight transportation in the rail sector. Spurs, with or without elevated loading platforms and varying amounts of storage space, were made available to rail customers for the purpose of transferring freight between railcars and trucks. The name is a holdover from the days when wagons pulled by teams of horses were used instead of trucks. These facilities, once a standard fixture of urban industrial areas, have become less and less important as merchandise traffic has shifted to truck, and heavy manufacturing and warehousing operations have relocated to suburban areas. Specialized transfer operations owned and operated by the carriers or private firms have, for all purposes, taken the place of general purpose team tracks.

7.3.3.2 Bulk Transfer Facilities

One form of carload transloading involves bulk transfer facilities. Both dry and liquid bulk products are handled such as: chemicals; fertilizers; farm and food products, e.g., grains, flour and sugar; construction materials, e.g., cement and aggregates; and petroleum products. Each

facility or terminal is outfitted with the necessary equipment for each type of commodity to be handled, and the transfers are made directly between railcar and truck.

The only railroad-owned facility in Mississippi is located on KCS in the Richland area just outside of Jackson, not far from the KCS intermodal facility described earlier. The 55-acre site has 15 acres of outside storage and track capacity for 65 railcars. It handles both bulk dry and liquid transfers.

As in the case of container/trailer intermodal facilities, there are a number of other bulk transfer terminals in neighboring states within potentially acceptable dray distances. **Table 7-4** provides a snapshot of accessible facilities.

Table 7-4: Accessible Bulk Transfer Facilities

Location	Serving Railroad	Description
Richland, MS	KCS	55 acres, 65 car capacity
Memphis, TN	CN	CN Cargo Flo
	CN	CN Logistics Center, 100 car spots
	CSX	Private, 56 car capacity
New Orleans, LA	CSX	CSX Transflow, 25 car capacity
Birmingham, AL	CSX	CSX Transflow, 65 car capacity

Source: Railroad websites

7.3.3.3 Automobile Distribution Facilities

Automobile terminals serve as transfer points between railcars loaded at manufacturing facilities to trucks for distribution, typically to local dealerships. Transfers of automobiles can also occur at points involved in automobile imports/exports. There is one automobile distribution facility in Mississippi, located in Meridian, which is included in the NS network. Additional facilities are located nearby as shown in **Table 7-5**.

Table 7-5: Automobile Distribution Facilities

Location	Serving Railroad	Description
Meridian, MS	NS	10 acres, 12 railcar spots, 750 vehicle bays
Memphis, TN	BNSF	23 acres, 36 railcar spots, 1,698 vehicle bays
New Orleans, LA	NS	25 acres, 25 railcar spots, 2,100 vehicle bays
Birmingham, AL	BNSF	9 acres, 25 railcar spots, 820 vehicle bays

Source: Railroad websites

7.3.3.4 Transload/Warehouse Operations

The transloading of commodities not in bulk form occurs at facilities such as reload centers and warehouses and may involve intermediate storage as opposed to direct modal transfer. These facilities handle products such as paper, steel and other metal products, lumber and other wood products, packaged foods, and general merchandise.

There are a number of transloading centers and warehouse operations spread over the State. There are others located in the same major commercial centers in neighboring states as the larger intermodal facilities. These types of transfer points are typically smaller and may specialize in certain commodities, as many require unique handling equipment or storage facilities, but many also handle multiple commodities. Accessible locations identified on railroad websites are the subject of **Table 7-6**, but others exist that are not listed.

Table 7-6: Transload/Warehouse Operations

State	Location	Number
Mississippi	Columbus	1
	Jackson	3
	Meridian	3
	Mt. Olive	1
	Pascagoula	5
	Vicksburg	2
	Yellow Creek	1
Alabama	Birmingham	12
	Huntsville	2
	Mobile	9
Tennessee	Memphis	19
Louisiana	New Orleans	12

Source: Railroad Websites

7.3.3.5 Summary

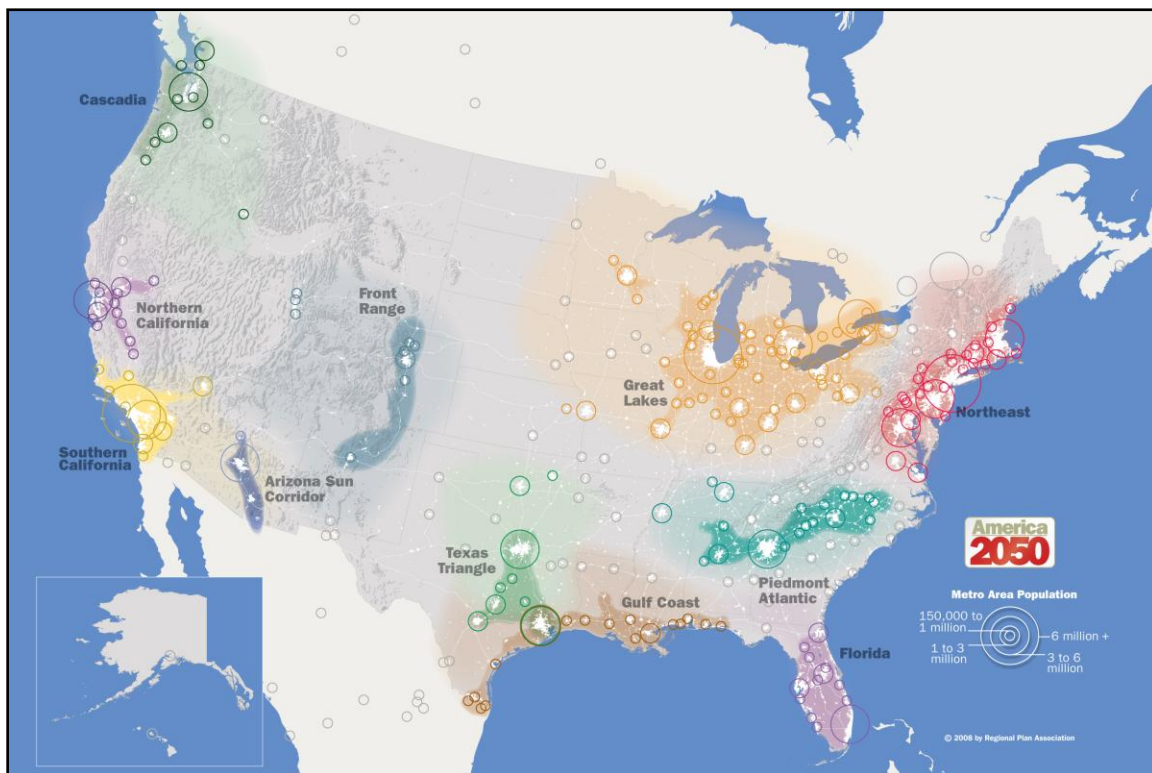
Major rail-truck trailer/container and bulk transfer intermodal facilities are limited in number in Mississippi, but when nearby locations in adjoining states are considered, transportation options are not as limited as they might first appear. There are, however, multiple options within the state of smaller reload and warehouse facilities that can accommodate a variety of modal transfers.

8. POTENTIAL PASSENGER CORRIDORS

8.1 Introduction

The development of expanded rail passenger service in Mississippi is faced with both opportunities and challenges. The biggest opportunity is the growth in travel demand. Intercity passenger rail can be most competitive in corridors of 100 to 600 miles that link major cities with frequent service while connecting with other transportation modes. The Gulf Coast High-Speed Rail corridor serves such major city pairs. The increase in short-distance travel demand (trips less than 600 miles) is also being influenced by the growth of megaregions. A megaregion is a network of metropolitan areas linked by geography, settlement patterns, shared environment, infrastructure systems, economics and trade, shared culture, and history. Southern Mississippi lies within the Gulf Coast megaregion, which stretches from Brownsville, TX to Pensacola, FL, as seen in **Figure 8-1**. According to the 2006 America 2050²⁶ report, most of the nation's population and economic expansion is expected to occur in the emerging megaregions. An increase in Mississippi's intercity travel capacity and options within the Gulf Coast mega region can be enhanced by improving intercity passenger rail service.

Figure 8-1: Megaregions of the United States in 2050



²⁶ <http://www.america2050.org/>.

8.1.1 Opportunities

Two other positive factors are the initiation of a federal high speed rail program designed to incent and prioritize corridor development and the strong working relationship that has developed among members of the Southern High-Speed Rail Commission (SHSRC) – Mississippi, Louisiana, and Alabama. Texas and Georgia are also potential corridor partners. Envisioned is a strong federal/state partnership and commitment to develop high-speed rail in the U.S. The implementation of key federal programs and flow of funds is serving as a catalyst to this effort.

The rail commission members have already accomplish key service additions, although they were short-lived, and have remained focused on the future. With that focus they are in the process of systematically developing plans for the Gulf Coast High-Speed Rail Corridor stretching from Birmingham to New Orleans to Baton Rouge and Houston with a leg from New Orleans to Mobile. In addition, the SHSRC has continued to focus on reinstating service between New Orleans and Jacksonville. The Gulf Coast High-Speed Rail network, as it is envisioned, will provide a strong trunk system around which ancillary commuter rail, feeder rail routes and connecting Thruway bus network can be developed. This larger network will help foster development, enhance transportation capacity and provide additional transportation choices.

8.1.2 Challenges

Expanded Mississippi rail passenger service faces several challenges. Most of the origins or destinations of Mississippi travelers are outside of the State of Mississippi. As a result, the only way to implement additional rail passenger service within Mississippi is in partnership with other states. Unlike other corridors where one state can be the dominant partner and through its commitments and funding sources overcome the budget shortfalls and issues of both itself and partner states, the states of the Southern High-Speed Rail Commission are truly interdependent. With one or two exceptions, rail service cannot begin or continue without full funding support of all SHSRC member states.

Many states are ahead of the SHSRC in funding, implementing, planning, analysis and estimates for expanded rail passenger service. Also when these states began their embryonic starter routes, the freight railroads had capacity available and Positive Train Control (PTC) or even signals were not required. Currently the growth of rail freight traffic has resulted in the freight rail industry requiring some capacity improvements for even one daily round-trip. In addition, safety improvements represent a substantial start-up cost.

These changes are occurring in an environment when state budgets are in substantial distress. States will be challenged to raise the required 20 percent match for capital investments and especially challenged to identify long-term funding flows needed to cover yearly operating costs.

One of the tasks mandated by PRIIA²⁷ was for Amtrak's Board of Directors, U.S. DOT, and the states to develop and implement a single, nationwide standardized methodology for establishing and allocating the capital and operating costs required in providing state-sponsored intercity rail passenger service.

Requirements for the federal funds are rigorous. Not only must prospective applicants have strong state and regional plans, but the states' or regions' priorities must be clearly delineated. They also must demonstrate the ability to generate a flow of funding over time to maintain the service. Strong program management must be shown and most importantly agreements with partner states, freight railroads and other stakeholders must show a strong consensus regarding the importance of the proposed project.

Finally, the Mississippi and its partner railroads must negotiate agreements acceptable to the FRA that define performance standards (schedules, on-time performance) and capacity utilization (balancing freight benefits and passenger rail benefits and preserving some capacity constructed with public funds for future rail passenger service).

8.2 Prospective Routes

Mississippi intends to build upon the current plans and priorities of the Southern High-Speed Rail Commission. Independently there is also value in improving, enhancing and expanding the current rail passenger service in Mississippi. Efforts that improve the usage, the feeder network, facilities, services (especially on-time performance) and fare box recovery ratio of the current service will reflect positively on any new proposed expansion of rail passenger service. Satisfied current Mississippi customers will become advocates for service expansion. Maintaining support for expanded rail service is critical given the financial challenges noted above and the fact that some of the expanded rail service proposed by the SHSRC will be outside Mississippi.

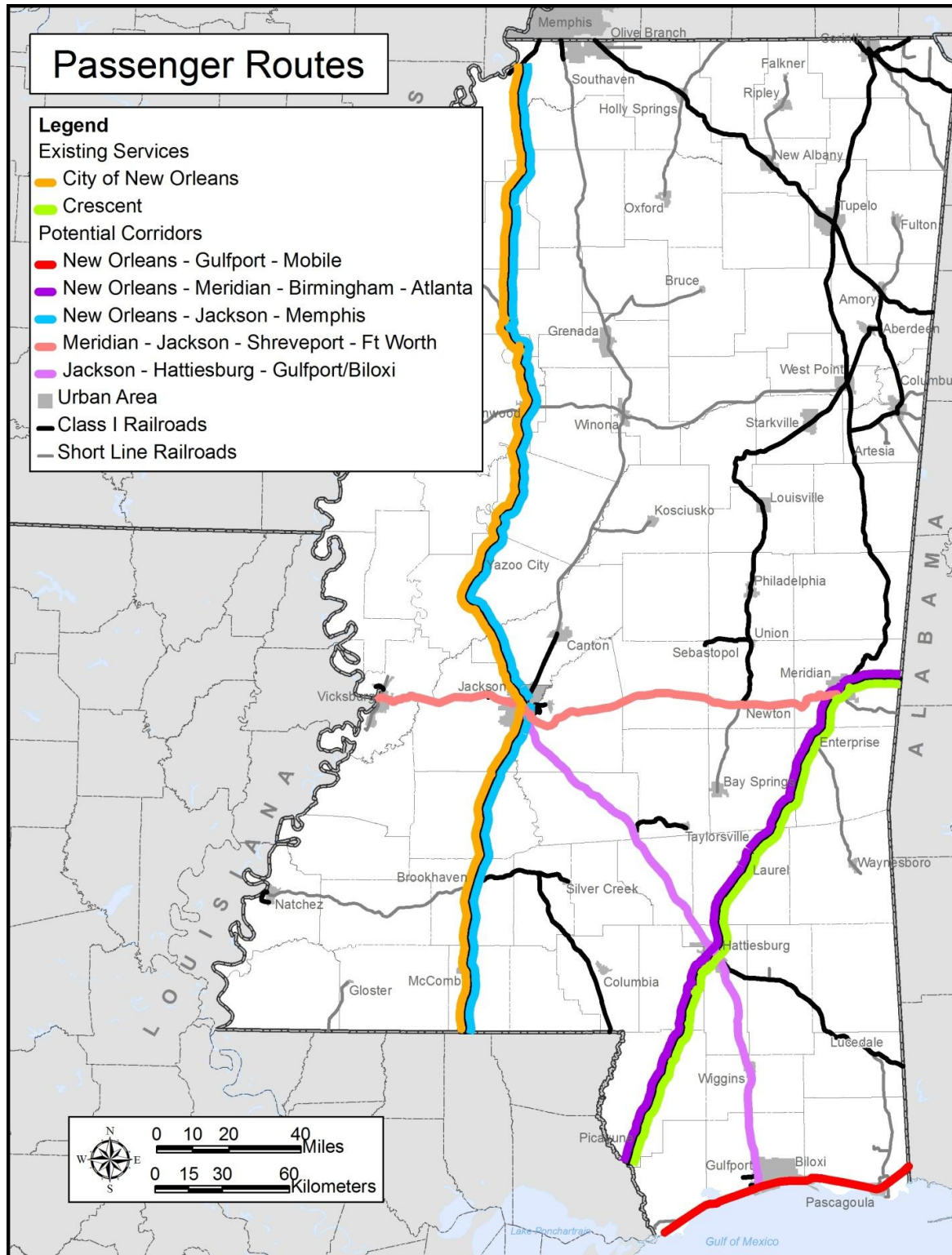
Appearing below are discussions over various potential new passenger routes for Mississippi. These are shown in **Figure 8-2**.

8.2.1 New Orleans-Gulfport-Mobile

Focusing on Mississippi's Gulf Coast and the New Orleans-Gulfport-Mobile route may represent the best near term strategy for new rail service. This route is part of the Gulf Coast High-Speed Rail network, and the successful implementation of rail service will help to solidify the partnership among the three core states. This segment of the corridor was intensively reviewed in the *Gulf Coast High-Speed Rail Corridor, New Orleans to Mobile Corridor Development Plan, Volume I, Summary Report*, October 2006.

²⁷ Passenger Rail Investment and Improvement Act of 2008. Public Law No. 110-432, Division B, enacted October 16, 2008, Amtrak/High Speed Rail.

Figure 8-2: Potential Passenger Rail Corridors Serving Mississippi



8.2.1.1 Corridor Description

The rail line is in good condition; stations and platform locations are identified (although rebuilding of hurricane damage will be required) and have a strong tourist industry to enhance demand. Improvements undertaken to initiate local service in this corridor can also represent the first phase of efforts to restore service from New Orleans to Florida, which will also benefit Magnolia State residents.

The corridor lies just inland of the Gulf of Mexico. The rail line runs through numerous coastal wetlands crossing 47 creeks or streams, two bays, a lake and seven navigable waterways with movable railroad bridges. In Mississippi the rail line passes through the heart of several cities including Pascagoula, Ocean Springs, Biloxi, Gulfport, Long Beach, Bay St. Louis, Waveland, and Pass Christian.

The first seven miles is used by Amtrak's daily *Crescent*. The first segment of the seven miles starts at New Orleans Union Passenger Terminal (NOUPT) ending 3.5 miles at East City Junction. This segment, like the station, is leased to Amtrak by the city-owned NOUPT Terminal. It is equipped with Centralized Traffic Control (CTC) whereby a dispatcher controls switches and signals from a remote location. The next segment is owned by the Norfolk Southern Railway and runs from East City Junction to New Orleans Terminal Junction. It is 3.4 miles in length, double track and has CTC.

At New Orleans Terminal Junction the route joins the CSX Transportation (CSXT) route that runs east to Flomaton, AL, connecting to rail lines extending to Jacksonville, FL, Cincinnati, OH and Atlanta, GA. This 137-mile route to Mobile, AL is a single track with short stretches of double track. Except within the yard limits of Sibert Yard in Mobile and Gentilly Yard in New Orleans the line is equipped with CTC with 10 controlled sidings that can be used for meets (or passes) and two stretches of double track. Most of the track is 132-lb. welded rail with ties in good condition. Maximum passenger train speed is from 60 to 79 mph, although there are some 30-mph speed restrictions in terminal areas and over certain bridges. Much of the line was substantially rebuilt in 2006 due to damage suffered as a result of Hurricane Katrina. Amtrak's Gulf Coast Service Plan Report indicated that this track segment of the CSXT was in a state of good repair and had sufficient capacity for tri-weekly rail service to resume. For additional frequencies a capacity modeling study will need to be undertaken in collaboration with CSXT to determine the additional capital improvements required for the requested number of frequencies.

As was noted above the speed restrictions over drawbridges (due to their structural design) combined with clusters of grade crossings severely constrain the route's capacity and average speed. The drawbridges over the navigable waterways also negatively impact reliability. Water traffic has absolute priority over rail traffic. Its passage is random in nature and generally occurs during daylight hours, the same time period that the corridor passenger trains will be operating. The impact on reliability is very unpredictable and cannot be factored into the timetable. On

some trips a train may suffer no delays while on other trips a train may be delayed by water traffic at several bridges. On other trips a train may suffer no direct drawbridge delays but may be negatively impacted by other trains that have had to stop for water traffic. The process and agreements undertaken by Amtrak and water stakeholders in Connecticut for the drawbridges between New Haven, CT and Providence, RI may provide guidance in resolving this situation.

The rail line is heavily used. In addition to local freight trains serving on-line industries the development plan noted that an average of about 18 to 19 freight trains use the corridor on a daily basis.

8.2.1.2 Corridor Development Plan

Key capacity improvements identified in the aforesaid *New Orleans to Mobile Corridor Development Plan* are summarized in **Appendix A**. The comprehensive improvements listed in the plan include:

- Upgrades to the track structure and geometry;
- Upgrades to the signal system;
- Reconfiguration, relocation, elimination or installation of controlled switches to improve network flexibility and throughput;
- Increases in capacity as a result of installing additional sidings and other trackage;
- Upgrading movable bridges; improving or separating rail/highway grade crossings; and,
- Installing fencing.

New passenger trains, operating with up to six round trips daily at speeds up 90 mph, will require capacity improvements to ensure fluid passenger and freight operations on the line. The aforementioned study estimated a need for \$287.5 million in line capacity and signal improvements in Mississippi, a figure appearing in **Appendix D**, along with other passenger corridor and station improvements.

Restoration of passenger service on this route could require the installation of a Positive Train Control (PTC) system, per the 2009 Rail Safety Improvement Act. The *Gulf Coast Service Plan Report* estimated a cost for PTC New Orleans-Jacksonville of \$20 million, but provided no figure specifically for Mississippi. Also, CSXT may have to install PTC anyway because of hazardous material loads on its freight trains. Thus, PTC costs are not included in the line improvement estimate above.

Improving rail/highway grade crossings is an example of a near-term improvement undertaken to lay the foundation for additional rail passenger service that is of immediate benefit to freight rail customers and motorists. The improvements listed in the plan would provide the capacity to handle the proposed passenger rail improvements (additional frequencies, increased reliability and faster travel times) and the projected rail freight growth.

One key question is the implementation of Positive Train Control. However given the deadline for the installation of PTC of yearend 2015, it will likely be in service on the New Orleans-Gulfport-Mobile route before any expansion of rail passenger service is undertaken.

8.2.1.3 Corridor Stations

Stations along the New Orleans-Gulfport-Mobile route are New Orleans, Bay St. Louis, Gulfport, Biloxi, Pascagoula, and Mobile. All of the intermediate stations suffered damage during Hurricane Katrina, and the Mobile station has been demolished. The stations in Mississippi need to be rebuilt and brought into compliance with ADA requirements. All of the stations had shelters with platforms, and the rebuilding cost was estimated in the Amtrak's 2009 *Gulf Coast Service Plan Report* to be \$2.4 million, as previously noted in Section 5.

While facing setbacks from the recession and Gulf oil spill, the key Mississippi stops on the route – Bay St. Louis, Gulfport, Biloxi, and Pascagoula – have shown signs of rebounding from the devastation wrought by Hurricane Katrina. Before the Gulf oil spill tourism had been rebounding with growth in hotel and food services employment. Mississippi's Gulf Coast is a key vacation destination. It offers white-sand beaches, varied outdoor activities, casino gaming and entertainment. Biloxi and Gulfport are the top cities visited along the Mississippi Gulf Coast. There are 12,500 rooms available, and about 14 percent of the total civilian labor force is in the arts, entertainment, recreation, accommodations or food service industries. Improved rail passenger service can help focus and accommodate future growth by providing additional transportation choices, reduce the need to expand the current highway network, and allow growth without the corresponding need to increase parking in this environmental sensitive area.

Bay St. Louis, population 8,404 (2009 est.), and Hancock County comprise a recreation Mecca on Mississippi's West Coast. Two casinos are located in the city as well as outdoor activities such as golf and fishing. Gulfport, population 70,732 (2009 est.), is the largest city on Mississippi's Gulf Coast. It has one casino and offers all of the amenities and recreational activities offered along the Gulf Coast. Gulfport is also the home of the U.S. Navy Seabees. Biloxi, population 45,768 (2009 est.), hosts eight casino resorts all offering all the first-class amenities expected of such resorts. It is also the home of Keesler Air Force Base. The final stop in Mississippi is Pascagoula. Its population is 23,677 (2009 est.). Pascagoula combines ante-bellum charm with the ambiance of a New England fishing village. The community focuses on quality of life and preservation of natural beauty.

Current availability of equipment for the service is limited. However, the issuance of the uniform equipment standards for bi-level passenger cars and the likelihood of a passenger car production line being established in the next few years should offer options for equipment acquisition.

8.2.1.4 Ridership Potential

The *Gulf Coast Limited* last operated between June 1996 and March 1997 (278 days). During that period it carried 34,117 riders with ticket revenues of \$427,000. Adjusting for inflation over the past 13 years that level of ticket revenue would equate to \$576,000 in 2010 dollars. During the period it operated the *Gulf Coast Limited* averaged 61 riders per train, an average of \$1,036 in ticket revenue per train and average ticket revenue (adjusted to 2010) of \$7.19 per train mile.

In June 2007 the Southern Rapid Rail Transit Commission (now the Southern High-Speed Rail Commission) issued the *Gulf Coast High-Speed Rail Corridor Plan, Lake Charles to Meridian Corridor Development Plan*. As part of the plan updated ridership and ticket revenue forecasts for the New Orleans to Mobile corridor were estimated by AECOM Consult. Forecast assumptions included improved running times, 79 mph and 90 mph, and three frequency options (2 round-trips, 4 round-trips and 6 round-trips). As can be seen below in **Table 8-1**, demand exists for a more frequent higher speed rail service in the New Orleans-Gulfport-Mobile corridor.

Table 8-1: New Orleans-Gulfport-Mobile Ridership and Ticket Revenues (2012)

Frequency	Speed	Annual Ridership ⁽¹⁾ (2012)	Annual Ticket Revenue	Avg. Riders per Train	Pass. Mile per Train Mile	Tkt. Rev. per Train Mile
2 RT	79 mph	152,838	\$1,912,000	105	58.8	\$9.09
4 RT	79 mph	252,766	\$3,171,000	87	49.3	\$7.54
6 RT	79 mph	335,791	\$4,284,000	77	45.0	\$6.79
2 RT	90 mph	Not Forecast				
4 RT	90 mph	310,246	\$4,083,000	106	65.3	\$9.71
6 RT	90 mph	391,307	\$5,052,000	89	53.8	\$8.01

Note:

(1) Includes connecting traffic from Houston-New Orleans and Atlanta-New Orleans corridors.

Additional forecast details and an overview of the forecast methodology are available in Volume II, Technical Appendices of the *Gulf Coast High-Speed Rail Corridor Plan, Lake Charles to Meridian Corridor Development Plan*.

8.2.2 New Orleans-Meridian-Birmingham-Atlanta

The proposed eastern Mississippi leg of the Gulf Coast High-Speed Corridor utilizes the NS's *Crescent Corridor* linking the Mississippi cities of Meridian, Laurel, Hattiesburg and Picayune with New Orleans, Birmingham, and Atlanta. This segment of the corridor was intensively reviewed in the *Gulf Coast High-Speed Rail Corridor Development Plan, Phase I: Improvement Implementation Plan – Meridian to New Orleans, Volume I Summary Report*, September 2002.

8.2.2.1 Corridor Description

The route passes through rural country with rolling hills. As a result the line has many short grades and curves. It also crosses a number of streams and rivers, some of which are navigable waterways.

The first seven miles is shared with the proposed New Orleans-Gulfport-Mobile corridor. Route details are outlined in the previous section. From New Orleans Terminal Junction the line passes just east of NS's Oliver Yard joining the main line to Meridian at Oliver Junction. Except for a stretch of double track between Oliver Junction and X Tower (west of the Lake Pontchartrain Bridge), NS's 195-mile route from New Orleans Terminal Junction to Meridian is mainly single track, with 132-lb. welded rail and sidings every 10 to 20 miles. The line is in good condition with the authorized maximum speed for passenger trains being 79 mph. There are, however, lower speed limits due to grades, curves and bridges. One challenge in improving the New Orleans-Meridian route is the rolling country traversed, which results in a high number of curves, some in excess of two degrees. This creates a conflict between faster passenger service (greater curve super elevation requirement) and freight service (lower super elevation requirement). It also impacts passenger comfort.

There are 11 sidings on this route segment, six of which are longer than 10,000 feet and can hold most current freight trains. Except for Purvis (1,087 feet), the other four sidings vary from 6,200 feet to 9,371 feet. While siding spacing appears adequate, the distance between the more usable longer sidings can be as much as 40 miles. Between Derby (11,790 feet) and X Tower (beginning of double track in New Orleans) is about 50 miles. Siding spacing greatly impacts the line capacity.

There is CTC signal protection between East City Junction and NE Tower and approximately 12.6 miles of double track with Automatic Block Signals (ABS), whereby trains travel in only one direction on each track between NE Tower and X Tower. From X Tower to Meridian the line is single track equipped with ABS and the siding switches that do not have dispatcher controlled switches. As a result siding switches are required to be manually aligned whenever a train has to enter a siding. This adds a significant amount of time to train meets especially when a freight train has to take the siding for a passenger train (the conductor must walk the length of the train after the switch is realigned). NS has added spring switches at sidings so that trains can leave a siding without having to stop and realign the siding switch.

As a result of the NS/KCS improvements to the Meridian Speedway, the Meridian Terminal is being reconfigured to remove many of the obstacles to fluidity through the terminal area. Operational and trackage changes will reduce or eliminate many of the conflicts between the two railroads and enhance the abilities of both freight railroads to interchange trains at Meridian and to operate through trains efficiently. At this writing, the Meridian Terminal will not be signaled between yard limits, and all turnouts will be manually operated. The track changes and operational changes are being phased in gradually to reduce impacts to terminal traffic during construction.

The line has a significant number of freight trains. In addition to local freight trains serving on-line industries and Amtrak's *Crescent*, the Improvement Implementation Plan – Meridian to New

Orleans noted that the line is used by an average of 16 through freight trains per day. This is a heavy volume for a single track rail line without CTC. Amtrak's *Crescent* currently utilizes this route taking four hours and two minutes eastbound (including intermediate stops) between New Orleans and Meridian. This equates to an average speed of just over 50 mph.

8.2.2.2 Corridor Development Plan

Key capacity improvements identified in the Improvement Implementation Plan – Meridian to New Orleans are summarized in **Appendix B**. The comprehensive improvements listed in the plan include:

- Upgrades to the track structure and geometry;
- Upgrades to the signal system (especially the installation of CTC);
- Reconfiguration, relocation, elimination or installation of controlled switches to improve network flexibility and throughput;
- Increases in capacity as a result of installing additional sidings and other trackage;
- Upgrading movable bridges;
- Improving or separating rail/highway grade crossings; and,
- Installing fencing.

New passenger trains, operating with up to six round trips daily at speeds up 90 mph, will require capacity improvements to ensure fluid passenger and freight operations. The aforementioned study estimated a need for \$251.6 million in line capacity and signal improvements in Mississippi.

Improving rail/highway grade crossings is an example of a near-term improvement undertaken to lay the foundation for additional rail passenger service that is of immediate benefit to freight rail customers and motorists. As this is a route with heavy freight traffic and current passenger service, PTC will in all likelihood be in service before any expansion of rail passenger service is undertaken. The improvements listed in the plan would provide the capacity to handle the proposed passenger rail improvements (additional frequencies, increased reliability and faster travel times) and the projected rail freight growth.

8.2.2.3 Corridor Stations

Stations along this route in Mississippi are Picayune, Hattiesburg, Laurel and Meridian. FY 2009 ridership at the four Mississippi stations on the route totaled almost 31,000 riders. Hattiesburg (11,168) and Meridian (11,646) accounted for the majority of riders.

Benefiting from a migration of population from the coast after Hurricane Katrina, the Mississippi cities along the New Orleans-Meridian route have shown growth over the past few years. Meridian, population 39,695 (2009 est.), is located in the North Central Hills Region and is a rail hub, home of Meridian Naval Air Station and center of industry. Meridian's award winning

renovated train station has leveraged more than \$8 million in downtown development. The importance of Meridian as a rail junction continues today as the eastern end of the Meridian Speedway. The Meridian Speedway is a new 320-mile transcontinental rail route linking Atlanta with the western carriers in Texas.

Laurel, population 18,865 (2009 est.), is located in Mississippi's pine belt. Lumber, poultry and oil services remain key industries. Through a local partnership Laurel has restored its depot into an award winning community center and train station. Hattiesburg, population 53,533 (2009 est.), is the home of the University of Southern Mississippi and William Carey University. South of Hattiesburg is Camp Shelby, a large National Guard training base. Hattiesburg restored its grand Italian Renaissance style depot in a multi-year effort that was completed in 2007. Picayune, population 12,023 (2009 est.), is the southernmost Mississippi city on the route. It has a newly rebuilt station designed as a classic early 20th Century passenger station.

Amtrak's 2009 *A Report on Accessibility and Compliance with the Americans with Disabilities Act of 1990* study cited \$5.1 million needed for the Hattiesburg and Meridian stations.

8.2.2.4 Ridership Potential

As part of the aforesaid *Gulf Coast High-Speed Rail Corridor Plan, Lake Charles to Meridian Corridor Development Plan*, ridership and ticket revenue forecasts for the New Orleans-Meridian-Birmingham-Atlanta corridor were estimated by AECOM Consult. Forecast assumptions included improved running times, 79 mph and 90 mph, and three frequency options (2 round-trips, 4 round-trips and 6 round-trips). As can be seen in **Table 8-2**, demand exists for a more frequent higher speed rail service in the New Orleans-Meridian-Birmingham-Atlanta corridor. However as was noted previously, equipment availability for near-term service initiation is limited.

Table 8-2: New Orleans-Meridian-Birmingham-Atlanta Ridership and Ticket Revenues

Frequency	Speed	Annual Ridership ⁽¹⁾ (2012)	Annual Ticket Revenue	Avg. Riders per Train	Pass. Mile per Train Mile	Tkt. Rev. per Train Mile
2 RT	79 mph	191,541	\$7,556,000	131	90.9	\$9.99
4 RT	79 mph	305,864	\$12,035,000	105	72.4	\$7.96
6 RT	79 mph	426,119	\$16,183,000	97	64.7	\$7.13
2 RT	90 mph	Not Forecast				
4 RT	90 mph	363,083	\$14,718,000	124	88.6	\$9.73
6 RT	90 mph	467,583	\$18,293,000	107	73.2	\$8.06

Note:

(1) Includes connecting traffic from Houston-New Orleans and Mobile-New Orleans corridors.

8.2.3 New Orleans-Jackson-Memphis

One of the features of the Midwest High-Speed Rail Initiative is the inclusion of several feeder routes – routes with fewer frequencies serving markets with smaller populations. In fact one of

the routes is Chicago-Carbondale, the northern end of the *City of New Orleans* route. The southern end of the *City of New Orleans* route, New Orleans-Jackson-Memphis through the center of the state, could be a feeder route to the Gulf Coast High-Speed Corridor. The additional connectivity offered by this feeder route would extend the benefits of the Gulf Coast High-Speed Corridor trunk system.

8.2.3.1 Corridor Description

The route from New Orleans and Memphis primarily utilizes two Canadian National Railway subdivisions, the 97-mile McComb Subdivision running south from Jackson and 206-mile Yazoo Subdivision running north from Jackson. A 2005 report on the McComb Subdivision by DMJM Harris/AECOM found rail (112 to 115-lb. welded rail), ties, ballast and drainage in good condition. There are 50 rail/ highway grade crossings and 27 railroad maintained bridges. There are six controlled sidings on the subdivision, most being from 9,000 to 11,000 feet long. The same 2005 report on the Yazoo Subdivision found rail (115-136-lb welded rail), ties, ballast and drainage in fair to good condition. There are 145 rail/highway grade crossings and 82 railroad maintained bridges. There are 15 controlled sidings on the subdivision most being from 9,000 to 11,000 feet long. Both subdivisions are single track with short stretches of double track. The subdivisions are signalized with CTC on the single track segments and ABS on the double track portions. Maximum authorized speed on both subdivisions is 60 mph freight, 79 mph passenger.

The line has a significant number of freight trains. In addition to local freight trains serving local on-line industries and Amtrak's *City of New Orleans*, the 2005 analysis of the route noted the operation of an average of 12 through freight trains on the McComb Subdivision and about an average of 16 through freight trains on the Yazoo Subdivision. Amtrak's *City of New Orleans* currently utilizes this route between New Orleans, Jackson, and Memphis. Northbound between New Orleans and Jackson the train takes about four hours with an average speed of 46 mph. Northbound between Jackson and Memphis the train takes about four hours and 30 minutes for an average speed of 50 mph. As a route with heavy freight traffic and current passenger service PTC will be in all likelihood in service before any expansion of rail passenger service is undertaken.

Besides overall line capacity, which must be addressed before rail passenger service can be expanded, there is also an area of potential congestion. In Jackson there is an approximately one-mile stretch (Jackson Jct. to the KCS Vicksburg line junction) where the KCS and CN share a joint right-of-way through the city (including Jackson Union Station). KCS trains also cross the CN just south of the station. Growth in freight traffic on both railroads and any increase in the number of passenger trains on any lines passing through Jackson will impact track investment requirements.

Also, as part of any planning for additional frequencies on the New Orleans-Jackson-Memphis line of the CN a capacity modeling simulation will need to be undertaken in collaboration with

the CN to determine the additional capital improvements required for the route extension. As capacity requirements are determined one option might be improving the Grenada Railway (formerly CN's Grenada Subdivision) and shifting the passenger trains to that line (where they operated prior to 1996).

8.2.3.2 Corridor Stations

Running south to north CN's former Illinois Central route is Mississippi's prime rail passenger service linking its capital with the major cities of New Orleans and Memphis. Key Mississippi stops are McComb, Brookhaven, Hazlehurst, Jackson, Yazoo City, and Greenwood. Details on station services, ridership and staffing are outlined in the Section 5. FY 2009 ridership at the four Mississippi stations on the route totaled almost 78,000 riders. Greenwood (14,168) and Jackson (45,030) accounted for the majority of riders.

McComb, population 13,645 (2009 est.), is the largest city in Pike County and home of more varieties of camellias than any other city in the U.S. Celebrating the city's railroad past (Illinois Central's McComb Shops) is the McComb Railroad Museum located in and around the station. Brookhaven, population 13,206 (2009 est.), is the home of the Mississippi School of the Arts. Hazlehurst, population 4,328 (2009 est.), offers many nearby recreational opportunities. Jackson, population 175,021 (2009 est.), is the state capital of Mississippi, the largest city in the state and the home of Jackson State University and the University of Mississippi Medical Center. Jackson also has an award winning train station that has spurred redevelopment around the train station. Yazoo City, population 11,244 (2009 est.), seat of Yazoo County, marks the boundary between the delta and the rolling hills of Mississippi. Greenwood, population 15,808 (2009 est.), is located in the heart of the delta and is home to the Viking Range Corporation and cooking school.

The 2009 Amtrak ADA compliance study identified \$2.5 million in station needs on this route.

8.2.3.3 Ridership Potential

Using the Chicago-Carbondale, IL route as guidance it would appear that two additional frequencies could be operated. The first would mirror the current *City of New Orleans* schedule but in the opposite direction, leaving New Orleans in the early morning and arriving in Memphis in the early afternoon. Southbound the schedule would leave Memphis in the late morning arriving New Orleans in the early evening. This would replicate the service that existed in Mississippi before Amtrak began operating rail passenger service. The second additional frequency option would operate between Jackson and New Orleans. It would depart Jackson in the early morning arriving in New Orleans before noon. The return schedule would leave New Orleans in the late afternoon arriving in Jackson in the early evening. This frequency would allow same-day trips to New Orleans from mid-state Mississippi and would maximize connections to Gulfport, Mobile and Houston as the Gulf Coast High-Speed Rail Corridor is developed.

Current ridership often gives the best guidance on the potential of additional frequencies. Generally an additional frequency will generate fewer riders on average than prior frequencies. Total route ridership will increase, but absent any improvements in travel time or reliability, average riders per train will decline. Local ridership for the New Orleans-Jackson-Memphis segment of the *City of New Orleans* in 2009 totaled almost 56,000 riders with ticket revenues of just over \$2 million. That is an average of about 76 riders per train, about \$2,767 in ticket revenues per train and \$6.82 in ticket revenues per train mile.

Local ridership for the New Orleans-Jackson segment of the *City of New Orleans* in 2009 totaled almost 27,000 riders with ticket revenues of about \$557,000. That is an average of about 36 riders per train, about \$763 in ticket revenues per train, and \$4.17 ticket revenues per train mile. This proposed frequency would clearly benefit from the additional ridership generated by enhanced connectivity to the Gulf Coast High-Speed Rail Corridor.

With travel time and reliability improvements, enhanced connections combined with focused revenue management and targeted promotion/marketing these results, at least for the initial frequencies, could probably be improved. However, as was noted previously, equipment availability for near-term service initiation is limited.

Given the New Orleans-Jackson-Memphis route's role as a connecting line to the Gulf Coast High-Speed Corridor, it is recommended that it be included when ridership and ticket revenue estimates for the Gulf Coast High-Speed Corridor are next updated. This would provide the level of connecting ridership on the route (for both existing and proposed frequencies) as well as guidance as to when new frequencies on the *City of New Orleans* route should be started.

Furthermore a rail operations simulation should be performed to identify the line capacity improvements required to accommodate the anticipated passenger frequencies on the line. A simulation is a standard practice in the industry to identify line capacity needs. The simulation program uses anticipated freight and passenger volumes and existing line configurations as inputs and measures the results in terms of delay. Line capacity improvements are added as needed to reduce delay to base case levels.

An estimate for the ridership forecasting and operations simulation effort for this and the two other corridors described below is \$300,000.

8.2.4 Meridian-Jackson-Shreveport-Fort Worth

As rail passenger service is improved and frequencies added to the New Orleans-Meridian route, new potential route options can be considered for the *Crescent*. One such option was explored by Amtrak in late 1990s when it studied splitting the *Crescent* at Meridian and operating a leg of the train from Meridian to Fort Worth. This ridership and ticket revenue study, undertaken by Amtrak as part of its Network Growth Strategy, found the proposed service worth pursuing.

Meridian-Fort Worth service would add significant new markets to the *Crescent*, allow same day connections to Amtrak western routes (the current connection requires an overnight stay in New Orleans), and provide direct service between the end-points of the Gulf Coast High-Speed Corridor (Atlanta/Birmingham) and the Texas T-Bone High-Speed Corridor (Dallas/Fort Worth), which in an earlier iteration was known as the Texas Triangle. This route would also provide new east/west service at Jackson and Vicksburg, and Shreveport, LA. A Dallas/Fort Worth leg of the *Crescent* operating in conjunction with the Gulf Coast and Texas T-Bone Corridors would mirror European networks where overnight trains link the extreme endpoints of their high-speed systems.

8.2.4.1 Corridor Description

The Meridian-Fort Worth, TX route is 538 miles long (854 miles Atlanta-Fort Worth), of which 141 miles is located in Mississippi. The route in Mississippi would utilize the KCS passing through Jackson and Vicksburg *en route* to Monroe and Shreveport. Currently there are no passenger trains operating on the route. A 2005 report on the route by DMJM Harris/AECOM found rail (136-lb. welded rail), ties, ballast and drainage in fair to good condition. There are 104 rail/highway grade crossings and 87 railroad maintained bridges.

The 2005 analysis of the route noted the operation of between 10 and 19 through freight trains per day. The maximum authorized timetable speed at this writing is 55 mph for freights and 59 for intermodal trains. With the extended sidings, track upgrades and CTC between Meridian and Bossier City, the capacity of the line has been increased.

The KCS line between Meridian and Shreveport is a key strategic rail corridor and a new transcontinental rail route. A 2006 agreement between NS and the KCS created joint ownership of the Meridian Speedway with the NS investing \$300 million in the route for track and signaling improvements. These improvements will allow the line to handle twice the number of through freight trains as it did in 2005. Given the timeline for the installation of PTC, PTC will likely be in service on this route before any expansion of rail passenger service is undertaken.

Besides overall line capacity, which must be addressed before rail passenger service can be inaugurated, there are two major areas of potential congestion. The first is the approximately one-mile stretch through Jackson (Jackson Junction to the KCS Vicksburg line junction) where the KCS and CN share a joint right-of-way. As was noted earlier the growth in freight traffic and potential new passenger service will impact track investment requirements at Jackson.

As noted earlier, significant track and operational changes are being implemented in the Meridian Terminal. At this writing, no provisions for Amtrak beyond the present short station stop/crew change activity have been incorporated into the new design. Provisions for passenger train switching or origination/termination of a separate train at Meridian for the Dallas/Fort Worth leg of the *Crescent* would have to be added to the terminal.

As part of any planning for the Meridian-Dallas/Fort Worth leg of the *Crescent* a capacity modeling simulation will need to be undertaken in collaboration with Norfolk Southern, Kansas City Southern and Union Pacific to determine the additional capital improvements required for the route extension.

8.2.4.2 Corridor Stations

Linking the North Central Hills Region with the Mississippi River, the Meridian-Dallas/Fort Worth route serves the key Mississippi stops of Meridian, Jackson and Vicksburg. City profiles for Meridian and Jackson were outlined earlier. Vicksburg, population 24,896 (2009 est.), is a major river port and leisure destination with five casinos and a rich history. It is the home of the U.S. Army Corps of Engineers and its Engineer Research and Development Center.

8.2.4.3 Ridership Potential

Because the *Crescent* is an Amtrak national network train and since only about a quarter of the route is located in Mississippi, instituting a Dallas/Fort Worth leg of the *Crescent* needs to be coordinated with Texas, Louisiana, Amtrak and the freight railroads. Also it is recommended that updated ridership and ticket revenue forecasts are undertaken once service commences on the New Orleans-Meridian-Birmingham-Atlanta corridor.

Ridership forecasting and an operations simulation are the next logical steps in assessing the potential of this route.

8.2.5 Jackson-Hattiesburg-Gulfport/Biloxi

A Jackson-Hattiesburg-Gulfport/Biloxi service utilizing the CN (90 miles Jackson to Hattiesburg) and the KCS (70 miles Hattiesburg to Gulfport) has been suggested by stakeholders. This route would provide additional travel options in southeast Mississippi and travel opportunities to Mississippi's Gulf Coast recreation areas.

8.2.5.1 Corridor Description

The 90-mile CN segment of the route is a secondary route linking the CN network with Mobile. The 2005 DMJM/AECOM study found that the rail (132-lb.), ties, ballast and drainage to be in good condition. The line is signalized (ABS) with maximum authorized speed of 49 mph. The 2005 study found an average of eight through freight trains travel the route segment on a daily basis.

Utilizing trackage rights on the CN from Jackson to Hattiesburg and KCS's own rail line from Hattiesburg to Gulfport, KCS operates a through route from Jackson to Gulfport. The 2005 DMJM/AECOM study noted that the Hattiesburg-Gulfport route had 90-lb. jointed rail, and ties, ballast and drainage in fair condition. There is no signal system on the line, and the maximum authorized speed is 25 mph. The 2005 study found an average of one to four through freight trains travel the route segment on a daily basis. While the recent award of \$20 million from the Transportation Investment Generating Economic Recovery (TIGER) grant program in early 2010

will help improve the line for double stack trains (track speed of 49 mph), additional track improvements will be needed for passenger service.

The Gulfport route impacts two areas of potential congestion. The first area is through Jackson (as noted earlier), and the second is in Hattiesburg where the rail line crosses several grade crossings resulting in significant motorist delays.

One key question is whether there is any toxic-by-inhalation freight traffic on the freight lines that make up the Jackson to Gulfport route. If so then the CN and KCS will be responsible for installing PTC along this route substantially reducing public sector start-up capital costs for this service.

As part of any planning for the Jackson-Gulfport, route a capacity modeling simulation will need to be undertaken in collaboration with CN and KCS to determine the additional capital improvements required for this new route.

8.2.5.2 Corridor Stations

Potential stations along the route are Jackson, Hattiesburg, and Gulfport, serving the Gulfport/Biloxi metro area. Profiles of these cities were outlined earlier. While Hattiesburg's grand Italian Renaissance style depot is close to the Gulfport line (approximately 200 feet), a separate platform will have to be constructed. Other intermediate stops could be considered, although the on-line cities (except Hattiesburg) have relatively low populations.

8.2.5.3 Ridership Potential

One strategy for evaluating a route and deciding whether to undertake an in-depth ridership and ticket revenue forecast is to calculate a top-line estimate based on city pair ridership (adjusted for population) for similar cities. Because of the modest on-line population levels on the route (total Metropolitan Statistical Area population of less than one million), a top-line estimate was undertaken. While this method is known to overstate potential ridership, it can provide guidance if there are questions on whether a route has sufficient population to support rail service. In the case of the Jackson-Hattiesburg-Gulfport route, two of the cities on the route have other Amtrak service in Mississippi. New Orleans was used as a proxy for Gulfport/Biloxi because of the high level of leisure travel in New Orleans. Not surprisingly, given the limited population of the route (city populations about 350,000), top-line ridership estimates for one daily round-trip are modest, totaling 9,300 riders annually. This equates to about 12 to 14 riders per train.

The modest level of ridership raises four issues. Low demand will result in a high level of operating subsidy per rider. The large capital requirements to upgrade the rail line from Jackson to Gulfport potentially divert resources from other rail corridors. The third issue is the cannibalization of riders from the New Orleans-Mobile route. When the Mobile route is developed, Jackson-Gulfport and Hattiesburg-Gulfport riders will have the option of connecting at New Orleans to Mobile trains. Thus much of the ridership on the Jackson-Gulfport route will

be diverted from the Mobile trains, reducing ridership and ticket revenue on that route. The final issue also deals with the level of operating subsidy. Because of the cannibalization of Mobile line riders by the Gulfport route, Mobile line ticket revenues will be lower and the operating subsidy of the Mobile line trains higher. As a result operating subsidies will be paid twice, once to operate the Gulfport route and again to backfill the loss of ticket revenues on the Mobile line.

Ridership forecasting and an operations simulation are the next logical steps in assessing the potential of this route.

8.2.6 Needs Summary

Appearing in **Table 8-3** are estimated costs for track and structure upgrades designated for 224 miles of rail line in Mississippi on two different rail corridors – New Orleans to Meridian (NS), and New Orleans to Mobile (CSXT). For the sake of consistency, the figures shown for line improvements on the New Orleans-Meridian and New Orleans-Mobile corridors were taken from the respective 2002 and 2006 high speed rail planning documents; the figures shown in Amtrak’s 2009 *Gulf Coast Service Plan Report* for restoration of Gulf service were not used.

Station improvement cost estimates are cited for two existing corridors (\$7.7 million for both the *City of New Orleans* on the CN and the *Crescent* on NS, per the Amtrak ADA study and cited in Section 5) and for restored service on the CSXT’s Gulf Coast line (\$2.4 million per the *Gulf Coast Service Plan Report*). Ridership and line capacity studies are cited for three potential corridors.

Table 8-3: Passenger Rail Needs

Item	Estimated Costs (\$ millions)
Track and Structure Upgrades	\$539.1
Station Improvements	10.0
Ridership Forecasts and Line Capacity Studies	0.3
Total	\$549.4

8.3 Priorities and Strategies

8.3.1 Multistate Partnerships

There are several priorities and alternative strategies for Mississippi as it seeks to implement expanded rail service. The first two key priorities must be achieved concurrently. As was noted above, the majority of origins and destinations for Mississippi residents are outside the state. Thus it is critical for Mississippi that the Southern High-Speed Rail Commission remains a highly coordinated, supportive, consistent partnership in order for Mississippi to achieve expanded rail passenger service. The SHSRC priorities and phasing plan need to be supported even if that means that a particular state’s projects are not the first to be undertaken. The strength of this partnership is a very important part of the federal application process. The second key

priority is the development of capital and operating funding streams. The latter (operating) is more challenging since it must be continuous and isolated from the rigors of the budget cycle. Capital funds offer more flexibility, varying by year, as long as the overall flow of capital funds is sufficient over time to assure an ongoing service able to fulfill market growth.

8.3.2 Freight Railroad Partnerships

Another key priority is a close working relationship with the partner freight railroads. The freight railroad must not only be a partner but an advocate of the proposed improvements. The freight railroad's traffic needs must be a key element in developing corridor plans. The corridor improvement strategy must not only improve and add capacity for the proposed rail passenger service but identify how freight service is improved as part of the investment. By identifying improvements that also improve rail freight service the opportunity for additional freight railroad capital investment arises.

8.3.3 Continuing Stakeholder Outreach

A strong outreach to a wide range of stakeholders is also important in achieving the funding requirements required to support the service and the phasing plan developed by the SHSRC. Public transportation advocates, on-line cities, the tourism industry, downtown business interests, connecting transit networks, taxi companies and rail line freight users all will benefit from an improved service and rail network. All will need a complete understanding of the need for a consistent funding source and the requirement that the service be expanded in distinct phases.

8.3.4 Funding Strategies

Funding availability will drive Mississippi's implementation strategy. Early development of specific capital and operating funds would allow Mississippi to move aggressively in developing additional rail service through the state. Such funding flows could impact the award of federal funds (where the percentage of match impacts the federal rate of return of the proposal) and influence overall network phasing decisions made by the Southern High-Speed Rail Commission.

If funding flows are more of a challenge, then the strategy would be a more conservative one. Implementation of actual rail service would be deferred, although Mississippi would strongly support early efforts by other SHSRC member states. Leveraging both private and public funds, capital investment planning and construction would focus on projects designed to lay the foundation for future rail passenger service while providing near-term benefits to key stakeholders, especially the freight railroad partners and freight shippers (by also improving rail freight service), cities (through grade crossing improvement projects) and current rail travelers. One critical facet is to contractually specify future rail passenger capacity to be added when each project is implemented.

Efforts should continue on improving Mississippi rail stations and maintaining and expanding services offered at the current redeveloped stations. Mississippi should coordinate efforts among stakeholders to promote enhanced usage of current rail services. Both the *City of New Orleans* and the *Crescent* have daytime schedules through Mississippi and with the current levels of on-time performance offer a travel option for residents of the Magnolia State as well as visitors. Serving as a facilitator and perhaps with an allocation of funding for promotion, the state can bring the travel industry and Amtrak together to identify opportunities for travel on the two trains. And the travel industry participants should not be limited to those in Mississippi. As was noted earlier, most Mississippians are traveling to destinations outside the state.

8.3.5 Multimodal Integration

Several Mississippi stations have been redeveloped into multimodal terminals. However, currently there are no direct interline ticketing agreements or coordinated connections between Amtrak trains and buses offered at these terminals. By coordinating with Greyhound Lines and other motor coach operators, several potential routes could be developed, especially out of Jackson. Routes such as Jackson-Meridian (serving both the *City of New Orleans* and the *Crescent*), Jackson-Hattiesburg-Gulfport/Biloxi (serving the *City of New Orleans* and the *Crescent*), Jackson-Hattiesburg-Mobile (serving the *City of New Orleans* and the *Crescent*), and Jackson-Vicksburg and perhaps Monroe, LA and Shreveport, LA (serving the *City of New Orleans*) are possible. Memphis-Baton Rouge, LA operating via Vicksburg and Natchez is a route that could be offered with the existing motor coach schedule. This route would connect with the *City of New Orleans* at Memphis.

Facilitating information about local transit routes and taxis serving Mississippi's noteworthy multimodal terminals can also aid in ridership growth. Unless riders are already familiar with the names of websites of transit operators, it is not easy to find this information. For example, no information about Mississippi transit connections is listed in Amtrak's timetable, and there is no link between the Visit Jackson website and JATRA's website (Jackson's local transit operator). On the other hand, the City of Meridian has a direct link that quickly takes you to the Meridian Transit System's website. Finally, several states have taken advantage of stakeholder resources to develop a corps of station and on-board docents to aid and inform rail passengers of the services available, state/city attractions, local shops/restaurants, and state and local history.

8.4 Other States Experience

8.4.1 Passenger Information and Personalized Service

One feature of North Carolina's state-sponsored rail service is the personalized service and information offered the traveler as they make their journey. The state, working with individuals supportive of rail service, has more than 100 volunteers in its Train Host Association. Riding the *Piedmont* and the *Carolinian*, these train hosts serve as North Carolina goodwill ambassadors

and add a welcoming dimension to the service. The train hosts assist passengers and provide information about passenger services, the train route, ground transportation, and area attractions. A station host program provides similar services to arriving and departing passengers at stations. A similar volunteer program could be undertaken at the Magnolia State's stations and onboard its two trains.

8.4.2 Feeder Bus Service

While California sponsors successful rail service on three corridors, perhaps its most notable feature is the extensive Thruway bus network that operates in conjunction with the rail services. The network of bus routes (23 in total) extends the reach of the rail service far beyond the 53 train stations to a total of 175 cities served. A significant number of rail passengers (up to 70 percent on one route) ride a connecting Thruway bus and the feeder bus network clearly contributes to the success of California's rail program.

The network has four main functions. These are:

- Increasing ridership on the trains by adding a significant number of additional cities to the rail system;
- Increasing the number of frequencies on corridor routes by adding parallel schedules during off-peak times of the day;
- Providing vital service to transit dependents residing in rural areas that have lost intercity bus service during the past decade; and,
- Enhancing the value of the rail program to taxpayers by serving many more California residents.

Perhaps the most unheralded feature of the program is the service it provides to cities that have lost intercity bus service in the past decade. Tennessee has also undertaken such an initiative.

Three types of Thruway bus services are operated:

- Dedicated, charter motor coaches operated exclusively for Amtrak passengers;
- Mixed Mode, motor coaches operated as regular intercity schedules carrying both rail passengers and bus passengers. The schedules and operations of these routes are coordinated with the train schedules. Financial support in addition to the value of rail passenger tickets lifted is provided to the motor coach operator; and,
- Interline, connecting rail tickets are honored and the motor coach carrier is paid the value of the tickets lifted but no other financial accommodation is undertaken. The schedules may or may not be coordinated with the rail service. This service is most successful when the connecting bus route has a high number of daily frequencies minimizing the negative impact of any missed connection.

In addition, California has instituted a Transit Transfer Pass program where conductors on the train offer free transfers to participating transit services. This increases awareness of the local transit connections and provides an incentive for the rail passenger to ride connecting transit in their destination city (“the last mile” issue).

8.4.3 Enhancing Rail Freight Capacity

The State of Washington has a very active rail passenger and freight program. One of the hallmarks of the program is an integrated freight and passenger rail system perspective with the goal being to increase the capacity of both as projects are identified and implemented. In addition to addressing the specific capacity concerns of the freight railroads as rail passenger service is increased, the state also has the long-term goals of maintaining its role as a key hub for international trade and maintaining and expanding intrastate rail shipments (especially of bulk commodities). The latter effort will help reduce its highway maintenance and capital needs and reduce highway congestion from heavy trucks. With the Class I railroads focused on meeting their needs for long-haul traffic, additional capacity is needed to make lower gross revenue short-distance traffic attractive.

Some notable projects are:

- **Vancouver, WA Rail Bypass** - Vancouver, WA is one of Washington State’s major ports, especially for bulk commodities. The new bypass track and port rail connection will add capacity for additional passenger trains but will also reduce rail congestion, increase freight rail velocity and in conjunction with other public/private rail projects in the port area greatly enhance the capability and capacity of the port. Construction of a new road bridge will also enhance livability for neighborhoods bordering the rail line;
- **Mt. Vernon Siding Upgrade** - The siding at Mt. Vernon, WA was in poor condition and could not be used by Amtrak trains, thereby limiting schedule flexibility. The siding was also too short to be used by current freight trains. A public/private partnership is upgrading and lengthening the siding to improve operational efficiency by increasing passenger and freight train capacity of the line. The upgrade also includes road improvements to eliminate highway delays when the siding is being used for train meets; and
- **Everett Curve Realignments and Storage Tracks** - Curves are being realigned in Everett, WA. This will increase the speeds of both passenger and freight trains improving rail service while reducing delays to Everett motorists and truckers. Additional longer storage tracks will speed freight trains entering the local switching yard increasing main line track capacity for both passenger and freight trains.

8.4.4 Unified Support

Actions by the members of the Midwest Regional Rail initiative – Illinois, Indiana, Iowa, Michigan, Minnesota, Missouri, Ohio, and Wisconsin – in signing the Memorandum of Understanding (July 2009) were noted as a strong indication of unity among Midwest states. By cementing agreement among the states to work cooperatively in supporting and understanding the importance of the network and key connections at the Chicago hub, even if it meant that projects in member states might be deferred to later stages, the memorandum served to demonstrate the value that federal investments in the Midwest region would yield.

8.4.5 Equipment

North Carolina has demonstrated that well maintained older equipment can deliver high customer satisfaction for a start-up rail service. The state's 40-year-old cars were overhauled and all mechanical systems standardized. They are delivering signature service on the *Piedmont*. If sufficient capital is available new equipment can be ordered for the start-up frequencies of the Gulf Coast High-Speed Corridor, but utilizing used rail cars saves scarce capital for track improvements. While the availability of used equipment is limited today, if Amtrak's goal of achieving a production line for the newly approved uniform design standards for bi-level passenger rail cars is achieved, used equipment may become available. States with upgraded corridors anxious to increase frequencies and expand and standardize their fleets will likely be first to order the new uniform design equipment. This should free up equipment that states just starting new corridors can overhaul for a 10-year life. New equipment built to the uniform standards can be ordered at a later date, keeping the passenger rail car production line open and helping to avoid the feast and famine that has marked previous passenger rail car order cycles. In addition, once the new passenger rail cars have been delivered, the older equipment can be mothballed as a reserve fleet available to boost capacity for hurricane evacuations.

8.4.6 Station Area Development

Many states and regions have been coordinating and encouraging development around their rail stations. The redevelopment fostered by the renovation of the Jackson and Meridian stations shows the reason why. The train station is a core downtown feature around which development can be focused. It is the location for the local transit bus hub and intercity bus depot. Higher density development (offices, retail, apartments and condos with parking structures) is encouraged close to the train station. Density is reduced as the distance from the train station increases. Townhouses and urban single family homes (single family homes on smaller lots) round out the development. This development in some ways replicates the urban landscape of the rail era and reflects that travelers whose origin or destination is within one-quarter to one-third of a mile of the rail station are far more likely to choose the train. Additional benefits of station area development are outlined in the Section 9: Livability.

8.5 Impact of Rail Passenger Service Expansion

Two Amtrak intercity passenger rail services operate through Mississippi today. These services, the *City of New Orleans* and the *Crescent*, stop at different stations in Mississippi. Each has just one round-trip per day, and they connect only in New Orleans. A third, the *Sunset Limited*, served the Gulf Coast twice weekly until Hurricane Katrina in 2005, and no specific date has been set for its restoration.

The purpose of this analysis has been to explore five potential new rail services plus several suggested Thruway motor coach services. Were these to be implemented, there would be potentially seven distinct rail services for Mississippians to ride. Two of the five services – New Orleans-Meridian-Birmingham-Atlanta and New Orleans-Jackson-Memphis – would be on existing Amtrak routes, where they would provide multiple frequencies daily at Mississippi stations. Two more – Meridian-Jackson-Shreveport-Fort Worth and Jackson-Hattiesburg-Gulfport/Biloxi – would be on totally new routes, providing rail service in parts of Mississippi that have not seen a passenger train in decades. The fifth would be a restoration of the suspended Gulf Coast Service.

The passenger service expansion envisioned above would see the implementation of multiple daily frequencies on the routes, Thruway feeder bus routes and multiple connections between all the services – rail, motor coach and local transit. Jackson, Hattiesburg, Gulfport and Meridian would be major connecting points. The result would be a robust passenger rail/motor coach network providing flexible and convenient travel options unavailable to Magnolia State residents today. Completing a multimodal theme, enhanced transit connections at stations would carry riders “the last mile,” facilitating access, reducing more vehicle dependence, and generally boosting livability, as discussed in Section 10.

9. FREIGHT RAIL IMPACTS

9.1 Introduction

The estimated economic impacts of freight rail activity in Mississippi address both rail transport service impacts as well as impacts to industries within the state that use rail to trade goods.

TRANSEARCH-derived, rail-specific inbound, outbound, and intrastate commodity flow volumes and values are applied in conjunction with the IMPLAN economic model to determine how such commodity movements generate *direct* economic impacts in Mississippi. Further, the *indirect* impacts associated with suppliers, and the *induced* impacts associated with the re-spending of income, are also quantified. Combined, the *direct*, *indirect*, and *induced* impacts comprise the *total* economic impacts. Such impacts are measured in terms of employment, income, value-added (i.e., Gross State Product), and output. The following sections outline the methodology adopted, relevant commodity flow data, and resulting impact estimates.

9.2 Approach, Data Sources and Movements

The economic impact estimation approach follows accepted industry impact analyses by identifying and categorizing the range of impacts directly and tangentially related to rail transportation. The following subsection outlines this methodology, the data sources, and the economic model used.

9.2.1 Impact Approach and Terminology

Economic impacts of freight rail transport are categorized into two broad impact **activities**: *transport-service* and *trade-users* impacts. For each broad *activity*, three impact **types** are quantified: *direct*, *indirect*, and *induced* impacts. And for each impact *type*, four impact **measures** are derived: *jobs*, *income*, *value-added*, and *output*. These impact activities, types, and measures are defined below.

Impact Activities – Mississippi freight rail-related economic impacts are categorized into rail *transport-service impacts* that would most-assuredly be lost in the absence of freight rail activity, and rail *trade-user impacts* that pertain to industries using rail as one of several available modes to transport freight.

- **Transport-Service Impacts** – Economic impacts associated with the provision of rail operations (i.e., the rail industry) include a wide range of primarily on-terminal activity, but also may include off-terminal support operations associated with administrative functions. Such activity includes Class I rail carriers (large railroads), as well as the other small Class III operators (small railroads).

- **Trade-User Impacts** – Economic impacts associated with shippers/receivers using the rail network for the movement of goods (e.g., intermediate and final goods, etc.), excepting the rail industry itself. Rail users have several options available to transport freight and could possibly substitute other modal transport (truck and/or water) if rail services became unavailable.²⁸ However, the choice to use railroads to ship/receive freight indicates cost and/or logistical advantages, and as such, removal of such advantages would negatively affect rail users.

Impact Types – The *Transport-Service* and *Trade-User* activity impacts each consist of three impact types (and a combined total):

- **Direct** – Impacts from the provision of freight rail transport (i.e., “*transport-services*”), as well from the firms/industries that use rail to ship and receive goods (i.e., “*trade-users*”).
- **Indirect** – Impacts associated with the suppliers that provide intermediate goods and services to the *directly* impacted industries.
- **Induced** – Impacts associated with the re-spending of earned income from both the *direct* and *indirect* industries in the study area.
- **Total** – Aggregated *direct*, *indirect*, and *induced* components.

Impact Measures – Each impact *type* is *measured* in terms of four economic metrics:

- **Jobs/Employment** – Employment measured in terms of full-time-equivalent (FTE) job-years.
- **Income** – The wage/salary earnings paid to the associated jobs.
- **Value-added** – The net additional economic activity (i.e., total output less gross intermediate inputs), synonymous with GRP (gross regional product) or GSP (Gross State Product). Includes employee and proprietor income, other income types, taxes, etc., required in the production of final goods and services.
- **Output** – The total sales value associated with all levels of economic activity (comprised of gross intermediate inputs *and* value added, combined).

9.2.2 Data Sources and Models

Reflective of agriculture, mining, manufacturing, and other production sectors, *Trade-User* impacts are typically much greater than those related to *Transport-Service*. Generating solid, comprehensive *Trade-User* impact estimates requires converting commodity movement data into *direct* industry output estimates. To do so, TRANSEARCH commodity movement data and the IMPLAN model are used.

²⁸ Further, the substitutability factor if rail became unavailable also affects the import of goods and material, which might result in the use of local products instead of out-of-state products.

TRANSEARCH – The TRANSEARCH[®] commodity database is the primary source for freight rail traffic movement data, based largely on the U.S. Surface Transportation Board’s (STB) Carload Waybill Sample. The Waybill Sample is a stratified sample of carload waybills for all U.S. rail traffic submitted by rail carriers that terminate 4,500 or more revenue carloads annually. Data applied in the economic analysis include 2006 tons and value²⁹, by commodity type and directional movement (inbound, outbound, and intrastate), categorized by Standard Transportation Commodity Classification (STCC) code level.

IMPLAN – The IMPLAN[®] v3 model, produced by the Minnesota IMPLAN Group, Inc., is an economic modeling, input-output based, social account matrix software used to estimate the economic impacts to a defined geography (i.e., the State of Mississippi) ensuing from expenditures in an industry or group of industries (or, commodity, or group of commodities).³⁰ A social account matrix reflects the economic interrelationships between the various industries (and commodities), households, and governments in an economy and measures the economic interdependency of each industry on others through impact multipliers. Impact multipliers are developed within IMPLAN from regional purchase coefficients, production functions, and socioeconomic data for each of the economic impact variables and are geographically-specific. IMPLAN data and industry-accounts closely follow the conventions used in the “Input-Output Study of the U.S. Economy” by the Bureau of Economic Analysis.

Additionally, IMPLAN provides commodity-to-industry production and absorption matrices that enable the quantification, for example, of how inbound grain is used across industries in production processes (i.e., poultry farms, bakeries, and other food processing industries) to create consumable final goods and services. Further, algorithms were developed for this analysis to translate TRANSEARCH commodity (STCC) data into IMPLAN. Such data and translation processes are used to estimate the impacts associated with directional commodity movements.

9.2.3 Rail Tonnage and Value

Rail tonnage volumes and corresponding commodity values by direction used in the economic analysis are based on the data and findings presented in Section 6, Rail Traffic Flows. Data presented details the consolidated commodity flows for inbound, outbound, intrastate, and through freight movements. For purposes of the economic analysis, three adjustments are made:

1. Commodity flow data is analyzed from a detailed perspective (versus the consolidated) to facilitate translation between the TRANSEARCH commodity categories to those of IMPLAN;
2. Intrastate movements were combined with outbound movements, since both reflect industry production within Mississippi; and,

²⁹ TRANSEARCH[®] reports total values for each commodity at each mode’s point of origin.

³⁰ Note that all impacts presented pertain only to one-year static impacts for year 2006 flows (in year 2008 values), and does not provide any dynamic or feedback changes.

3. The year 2006 price levels provided by TRANSEARCH were inflated to year 2008 price levels to facilitate the 2008-based IMPLAN model (inflated via the U.S. Bureau of Labor Statistics Producer's Price Index, by commodity).

While the detailed commodity freight flows are evaluated in the economic impact calculations, the consolidated movement flows and values are summarized below to provide an order-of-magnitude understanding and to illustrate key concepts.

Inbound Commodities – While *Coal* leads in terms of inbound consolidated tonnage (3.9 million) in 2006, *Chemical or Allied Products* are the most valuable (\$3.1 billion) defined inbound commodities moved by rail, as shown in **Table 9-1**. Interestingly, while *Other* (undefined) freight flows comprise only 6.5 percent of inbound volume, it comprises a much greater share (34.1 percent) of inbound value. As a consequence of the differentiated commodity composition by volume versus value, the average value per ton varies between commodities, and this significant variance underscores the need to evaluate the detailed commodity perspective in the economic impacts estimation. In all, over 80 inbound commodity types were evaluated.

Table 9-1: Inbound Rail Freight Volume and Value by Major Commodity

Consolidate Commodity	Volume ⁽¹⁾		Value ⁽²⁾		Average Value (\$/ton)
	Tonnage	Percent	\$ (million)	Percent	
Coal	3,889,466	23.7%	\$140	1.3%	\$36
Farm Products	3,144,845	19.2%	\$713	6.5%	\$227
Chemicals or Allied Products	2,365,959	14.4%	\$3,066	28.0%	\$1,296
Nonmetallic Minerals	2,137,750	13.1%	\$32	0.3%	\$15
Food or Kindred Products	1,361,370	8.3%	\$1,717	15.7%	\$1,261
Pulp, Paper or Allied Products	916,820	5.6%	\$822	7.5%	\$897
Clay, Concrete, Glass or Stone	557,360	3.4%	\$182	1.7%	\$327
Metallic Ores	416,458	2.5%	\$232	2.1%	\$557
Petroleum or Coal Products	310,381	1.9%	\$252	2.3%	\$812
Waste or Scrap Materials	209,838	1.3%	\$52	0.5%	\$248
Other	<u>1,069,019</u>	<u>6.5%</u>	<u>\$3,737</u>	<u>34.1%</u>	\$3,496
Total	16,379,266	100.0%	\$10,945	100.0%	\$668

Notes:

(1) Year 2006 volume

(2) Inflated to year 2008 dollars (from given 2006 values)

Outbound/Intrastate Commodities – Review of the consolidated outbound/intrastate freight rail traffic flows indicates that *Chemicals or Allied Products* lead in both terms of tonnage (3.4 million) and value (\$5.8 billion), as shown in **Table 9-2**. Valued at \$5.4 billion, *Transportation Equipment*, while modest in terms of tonnage (0.5 million tons), is nearly the same total value as *Chemicals*. Combined, outbound/intrastate tonnage totals 11.6 million tons valued at \$15.6 billion. Note that the total average value per ton of outbound/intrastate commodities (\$1,347) is twice that of inbound commodities (\$668).

Table 9-2: Outbound/Intrastate Rail Freight Volume and Value by Major Commodity

Commodity	Volume ⁽¹⁾		Value ⁽²⁾		Average Value (\$/ton)
	Tonnage	Percent	\$ (million)	Percent	
Chemicals or Allied Products	3,388,577	29.3%	\$5,770	41.1%	\$1,703
Lumber or Wood Products	2,507,693	21.7%	\$703	5.0%	\$280
Pulp, Paper or Allied Products	1,973,156	17.1%	\$1,258	9.0%	\$638
Petroleum or Coal Products	656,095	5.7%	\$617	4.4%	\$940
Transportation Equipment	483,940	4.2%	\$5,359	38.2%	\$11,074
Clay, Concrete, Glass or Stone	488,327	4.2%	\$82	0.6%	\$168
Metallic Ores	453,492	3.9%	\$210	1.5%	\$463
Food or Kindred Products	702,500	6.1%	\$657	4.7%	\$935
Waste or Scrap Materials	160,330	1.4%	\$53	0.4%	\$331
Primary Metal Products	111,464	1.0%	\$201	1.4%	\$1,803
Other	644,061	5.6%	\$673	4.8%	\$1,045
Total	11,569,635	100.0%	\$15,583	111.1%	\$1,347

Notes:

(1) Year 2006 volume

(2) Inflated to year 2008 dollars (from given 2006 values)

9.3 Impact Findings

Freight rail activity in Mississippi impacts an estimated 150,950 *total* jobs across the State. A vast majority of these *total* employment impacts arise from rail users who trade goods via the rail system, with the balance attributable to rail transport services. In terms of jobs, *trade-user* related employment impacts 147,450 jobs (97.7 percent of *total* jobs), versus 3,500 (2.3 percent) rail transport-service related jobs. These summary rail-operation and rail-user impacts include the *direct* impact of goods and services provided, the *indirect* impact associated with suppliers, and the *induced* impacts associated with income re-spending.

The ensuing discussion details the composition of the employment impact estimates, as well as the other impact *measures* (e.g., output, value-added, and income). The impact *types* (e.g., direct, indirect, and induced) and *measures* are first presented for rail *Transport-Services*, and then for *Trade-Users*. The total impacts are then summarized for both rail activities by impact *measure* and *type*.

9.3.1 Rail Transport-Service Impacts

The *direct* impact of Mississippi rail operations totals 1,380 jobs. The *indirect* and *induced* (i.e., the multiplier) effect associated with rail operations yield an additional 2,120 jobs (1,000 and 1,120, respectively) throughout the state. Combined, an estimated 3,500 people owe their jobs, directly or tangentially to the physical movement of freight by rail. This excludes the trade-user impacts associated with the shippers/consignees that ship/receive goods, as quantified in the following subsection.

Direct Rail Transport-Service Impacts – The *direct* output impacts related to rail services total \$526 million, of which \$132 million is paid in income to the 1,380 people *directly* employed in the rail industry, as shown in **Table 9-3**. These impacts typically occur at rail yards, with the vast majority of direct jobs resulting from freight service.

Table 9-3: Rail Transport-Service Impacts

Impact Type	Output ⁽¹⁾	Value Added ⁽¹⁾⁽²⁾	Labor Income ⁽¹⁾	Employment ⁽³⁾
Direct	\$526	\$308	\$132	1,380
Indirect	\$129	\$58	\$40	1,000
Induced	<u>\$111</u>	<u>\$63</u>	<u>\$34</u>	<u>1,120</u>
Total	\$766	\$429	\$206	3,500

Source: Wilbur Smith Associates

Notes:

(1) Millions of 2008 dollars

(2) Comparable with Gross State Product (GSP)

(3) In FTE job-years

Total Rail Transport-Service Impacts – The *indirect* output impacts associated with the supply of products and services to rail transport providers total \$129 million, of which \$40 million is paid in income to 1,000 *indirect* jobs. The re-spending of *direct* income (\$132 million) and *indirect* income (\$40 million) generates an additional \$111 million in *induced* output impacts, of which \$34 million is paid to an additional 1,120 jobs.

Combined, a *total* of 3,500 jobs are related directly or tangentially (indirect and induced) to the provision of rail transport in Mississippi. These employees earn a total of \$206 million. Total output related to such rail transport services totals \$766 million.

9.3.2 Rail Trade-User Impacts

In addition to the rail-operation (transport-service) impacts detailed above, many consignees and shippers in the state heavily rely on the rail service to receive and/or ship freight. In doing so, they generate significant impacts as well. While these firms/industries are not entirely dependent on the freight shipments by rail, it is hard to envision their continued operation levels without such access. In fact, rail access is often instrumental in major manufacturing business location decisions.

If railroads did not accommodate demand, consignees and shippers could use other modes (i.e., truck, water, air, etc.) to transport freight. However, the use of other modes would likely entail higher transport costs (due to longer transport distances, price, logistics, etc.), and could increase overall demand (and resulting handling costs) for all users of other modes (both the diverted rail users as well as current users). The long-term result would be a migration of industry away from Mississippi to other locations with relatively better rail accessibility.

The following analysis identifies the economic impacts associated with firms in Mississippi that rely on rail transport. To estimate such impacts associated with rail tonnage movements requires an understanding of how the various inbound and outbound commodities are used or produced by various industries to generate output, income, and employment. To do so, the IMPLAN commodity-to-industry matrices were applied to estimate *direct* impact measures. *Indirect* and *induced* multipliers were then applied to the *direct* impact estimates to derive *total* economic impacts.

Trade-User Impacts – The *direct* output of rail users in Mississippi totals \$22.6 billion, of which \$3.4 billion is paid in the form of income to 68,520 *direct* jobs. Indirect impacts associated with suppliers account for another \$7.0 billion in annual output, of which \$1.8 billion is paid in income to 45,040 jobs. The re-spending of direct and indirect income (\$5.2 billion) generates additional *induced* impacts of \$3.1 billion in output, of which \$1.0 billion is paid in income to 33,890 jobs.

As shown in **Table 9-4**, a *total* of 147,450 jobs in Mississippi can be traced back to the firms that ship and/or receive freight via rail in Mississippi. Of these *total* jobs, approximately 39 percent (57,250 jobs) are attributable to freight originating in Mississippi (including intrastate movements) and 61 percent (90,200 jobs) are attributable to inbound freight terminating in Mississippi. These impact estimates are based on the freight volumes and values presented in Table 9-1 and Table 9-2, as discussed below.

Outbound/Intrastate Trade-User Impacts – 11.6 million tons of freight originating in Mississippi is either shipped via rail out-of-state (9.8 million tons) or internally (1.7 million tons). Combined, rail freight originating in Mississippi is valued at \$15.6 billion (Table 9-2), and generates an estimated \$12.6 billion (Table 9-4) in *direct* output in Mississippi.³¹ This *direct* output, tabulated by industry, was applied to IMPLAN multipliers to estimate the associated *indirect* and *induced* impacts associated with Mississippi goods and materials transported by rail. As also shown in Table 9-4, the *total* impact associated with such movements totals \$18.1 billion in output, of which \$3.0 billion is paid in income to 57,250 jobs Statewide.

Inbound Trade-User Impacts – The 16.4 million tons of freight originating beyond Mississippi that terminates in the State, valued at \$10.9 billion (Table 9-1), are used by Mississippi industries to generate \$10.0 billion in *direct* output (Table 9-4).

³¹ Note that some scrap and other materials are secondary products of low value that are not directly related to output, which is why the direct output is slightly less than the tonnage value.

Table 9-4: Rail Trade-User Impacts

Measure and Type	Outbound /Intrastate ⁽⁴⁾	Inbound ⁽⁴⁾	Trade-User Total ⁽⁴⁾
Output⁽¹⁾			
Direct	12,581	9,989	22,570
Indirect	4,129	2,873	7,002
Induced	<u>1,394</u>	<u>1,666</u>	<u>3,060</u>
Total	18,104	14,528	32,632
Value Added⁽¹⁾⁽²⁾			
Direct	2,319	3,339	5,658
Indirect	2,003	1,140	3,143
Induced	<u>966</u>	<u>957</u>	<u>1,923</u>
Total	5,288	5,436	10,724
Labor Income⁽¹⁾			
Direct	1,350	2,009	3,359
Indirect	1,128	671	1,799
Induced	<u>514</u>	<u>509</u>	<u>1,023</u>
Total	2,992	3,189	6,181
Employment⁽³⁾			
Direct	19,040	49,480	68,520
Indirect	22,780	22,260	45,040
Induced	<u>15,430</u>	<u>18,460</u>	<u>33,890</u>
Total	57,250	90,200	147,450

Source: Wilbur Smith Associates

Notes:

(1) Millions of 2008 dollars

(2) Comparable with Gross State Product (GSP)

(3) In FTE job-years

(4) Overlap impacts associated with cargo that potentially moves in and out by rail is subtracted-out.

This output is comprised of *final demand* and *industry demand*, where:

- **Final Demand** – 23 percent (\$2.6 billion) of inbound freight value is estimated to comprise finished goods bound for final demand markets (e.g., households, governments, etc.) and distributed via wholesale or retail outlets, or through direct sales (which has no associated impacts). The sales of those \$2.6 billion of rail inbound merchandise generates an estimated \$0.5 billion in *direct* wholesale/retail output in Mississippi, as shown in **Table 9-5**.

Table 9-5: Inbound Rail Trade-User Value and Direct Output

Demand Type	Freight Value (billion)	Direct Output (billion)
Final	\$2.6	\$0.5
Industry	<u>\$8.3</u>	<u>\$9.5</u>
Total	\$10.9⁽¹⁾	\$10.0⁽²⁾

Notes:

(1) See Table 9-1 (Inbound Total Value)

(2) See Table 9-4 (Inbound Direct Output)

- **Intermediate Demand** – 76 percent (\$8.3 billion) of inbound freight value is used/absorbed by Mississippi industries in their production processes. These commodities are allocated to the major industry users based on relative absorption patterns. Output impacts are then estimated based on each industry’s average value-added contribution to intermediate inputs to produce final goods and services. The exercise generates an industry output estimate of \$9.5 billion (Table 9-5)

Of the estimated \$10.0 billion in *direct* output, \$2.0 billion is paid in income to 49,480 jobs (Table 9-4). Combined with indirect and induced effects, the impact associated with inbound trade-users impacts *total* \$14.5 billion in output of which \$3.2 billion is paid in income to 90,200 jobs.

Trade-User Impact Overlap – Two notable impact *overlap* issues arose in the estimation process: *intra-modal* overlap and *inter-modal* overlap. First, *intra-modal* overlap occurs when supplies, such as seed and fertilizer, are imported by a grain producer. The user impacts quantified allocate a share of the inbound seed and fertilizer commodities to the grain industry and then estimate the industry-associated output. The *intra-modal* overlap potential then arises when the grain is then transported by rail out of the state, since impacts are estimated for outbound rail movements. So in effect, the output associated with the grain industry would be counted twice: once associated with the inbound movement of seed and fertilizer, and second with the outbound movement of grain. To avoid double-counting impacts, such potential overlaps were identified and subtracted-out of the analysis to ensure conservative estimates.³² The *intra-modal potential overlap* subtracted from the impact findings comprise between 8 and 15 percent of the total reported impacts, depending on the *impact measure* and *type*.

³² While the TRANSEARCH data and IMPLAN model provide comprehensive analysis potential, they cannot be used to specifically track how such inbound rail commodities result in corresponding outbound rail commodities. Therefore, to avoid double-counting, an estimate is made of the *potential overlap* by identifying the minimum output between the modal directions. For example, if grain industry output associated with inbound seed and fertilizer totals \$100 million and the grain industry output shipped outbound by rail totals \$60 million, the maximum potential overlap would be the minimum between the two movements (e.g., \$60 million), because all of the rail outbound grain-related impacts *could* have been produced with the rail inbound commodity inputs.

So, instead of estimating a total direct impact of \$160 million (aggregating the separately-calculated inbound- and outbound-related impacts), the \$60 million in *potential overlap* is subtracted-out of the analysis, resulting in a conservative trade-user impact estimate of \$100 million between the two directional movements.

However, it is doubtful that the overlap would be 100 percent. Specifically pertaining to the example, it is doubtful that the \$60 million in rail grain output could be entirely traced to the same \$100 million of inbound rail seed and fertilizer.

Similar in principle to the first, the second potential overlap issue concerns port and waterway impacts, which are also estimated as part of the Mississippi MULTIPLAN. If an inbound rail commodity is used in the production of an outbound port/waterway commodity (or vice-versa), then the same convention is required when evaluating the combined impacts associated with rail and port movements. Specifically, the potential overlap is subtracted-out to ensure no double-counting occurs.

For the purposes of the Mississippi Rail Plan, the *intra-modal* potential overlap impacts are subtracted-out of the presented results. However, the *inter-modal* potential overlap impacts are not addressed here, as it would understate the *trade-user* impacts associated with freight rail movements.

9.3.3 Total Rail Activity Impacts

Rail service is essential to Mississippi's economy. While the basic provision of rail service generates a modest 1,380 *direct* jobs (3,500 including multiplier effects), rail trade-users in the state generate 68,520 *direct* jobs. Combining the *total* rail trade-users job impacts of 147,450 (inclusive of the multiplier impacts) with rail transport-services jobs yields a *total* rail-related employment impact of 150,950 jobs, with \$6.4 billion paid in income and output of \$33.4 billion. The impact summaries by type, measure, and category are summarized in **Table 9-6**.

These rail-related impacts are also compared with state total employment, income, and gross state product (GSP) in **Table 9-7**. In summary:

- 150,950 jobs directly or tangentially affected by rail represent 9.9 percent of the 1.5 million jobs statewide (in 2008).
- \$6.4 billion earned by these employees represents 11.0 percent of Mississippi's total income (in 2008).
- And, the combined value-added impact, \$11.2 billion, associated with the rail operations and rail users represents 12.3 percent of GSP.

Table 9-6: Total Rail Activity Impacts

Measure and Type	Transport-Service	Trade-User ⁽⁴⁾	Total
Output⁽¹⁾			
Direct	\$526	\$22,570	\$23,096
Indirect	\$129	\$7,002	\$7,131
Induced	<u>\$111</u>	<u>\$3,060</u>	<u>\$3,171</u>
Total	\$766	\$32,632	\$33,398
Value Added⁽¹⁾⁽²⁾			
Direct	\$308	\$5,658	\$5,966
Indirect	\$58	\$3,143	\$3,201
Induced	<u>\$63</u>	<u>\$1,923</u>	<u>\$1,986</u>
Total	\$429	\$10,724	\$11,153
Labor Income⁽¹⁾			
Direct	\$132	\$3,359	\$3,491
Indirect	\$40	\$1,799	\$1,839
Induced	<u>\$34</u>	<u>\$1,023</u>	<u>\$1,057</u>
Total	\$206	\$6,181	\$6,387
Employment⁽³⁾			
Direct	1,380	68,520	69,900
Indirect	1,000	45,040	46,040
Induced	<u>1,120</u>	<u>33,890</u>	<u>35,010</u>
Total	3,500	147,450	150,950

Source: Wilbur Smith Associates

Notes:

(1) Millions of 2008 dollars

(2) Comparable with Gross State Product (GSP)

(3) In FTE job-years

(4) Includes both inbound and outbound/intrastate related impacts. Overlap impacts associated with cargo that potentially moves in and out by rail is subtracted-out.

9.4 Conclusion

The economic analysis clearly demonstrates that rail activities and services provide a vital role in Mississippi's economy. The associated employment, income, value added, and output impacts span all industries and reach every region of the State:

- The impact of rail transport goes far beyond the 1,380 directly employed in the provision of rail transport. When the trade-user impact activities and the indirect/induced effects are included, rail-related employment in Mississippi totals 150,950 jobs. These total jobs represent 9.9 percent of the 1.5 million jobs statewide.
- The \$6.4 billion earned by these employees represents 11.0 percent of Mississippi's total income.
- And, the combined value-added impact, \$11.2 billion, associated with the rail operations and rail users represents 12.3 percent of the state's gross state product (GSP).

Table 9-7: Total Rail Activity Impacts

	Transport Service	Trade-User	Total
Value Added as % of State GDP⁽¹⁾			
Direct	0.34%	6.2%	6.6%
Indirect	0.06%	3.5%	3.5%
Induced	<u>0.07%</u>	<u>2.1%</u>	<u>2.2%</u>
Total	0.47%	11.8%	12.3%
Labor Income as % of State Income⁽²⁾			
Direct	0.23%	5.8%	6.0%
Indirect	0.07%	3.1%	3.2%
Induced	<u>0.06%</u>	<u>1.8%</u>	<u>1.8%</u>
Total	0.35%	10.6%	11.0%
Employment as % of State Employment⁽³⁾			
Direct	0.09%	4.5%	4.6%
Indirect	0.07%	2.9%	3.0%
Induced	<u>0.07%</u>	<u>2.2%</u>	<u>2.3%</u>
Total	0.23%	9.6%	9.9%

Notes:

(1) Compared to total Mississippi GSP of \$90.6 billion

(2) Compared to total Mississippi income of \$58.1 billion

(3) Compared to total Mississippi employment of 1.53 million

While it would be erroneous to conclude that all of these impacts are entirely and solely dependent on rail, the findings do show that rail service facilitates business for a wide range of economic activities throughout the state. Specifically, these impacts highlight the magnitude of rail use by manufacturers across the state, as well as dealers, retailers, and others who transport materials, component parts, and products.

Increasingly, the globalization of trade and manufacturing require dependable and efficient access to transport facilities. Significantly cheaper than highway, rail transport provided by the various railroads provides cost and/or logistical advantages to Mississippi firms that enable the state to compete efficiently in the global market place.

10. LIVABILITY

10.1 Introduction

The State of Mississippi's economy and overall quality of life depend on the safe and efficient movement of people and goods. More specifically, Mississippi's residents, industries, and businesses rely on high quality access to, and connectivity between, transportation modes. Everyday consumers decide how best to get to work, downtown, business meetings, etc., while shippers decide how best to move goods. Rail is an important component of a multimodal transportation system and enhances the overall livability of communities across the state.

The previous section addressed the economic impacts associated with the businesses that either provide rail transport or use rail to transport goods and materials. However, impacts associated with rail transport extend beyond the quantifiable jobs, income, output, etc. Other social-environmental impacts arise concerning how rail affects "livability" in Mississippi.

This section contextualizes the hard-to-quantify qualitative benefits associated with rail transport. After outlining the general benefits related to rail passenger and freight, land use and smart growth, the section discusses specifically how passenger and freight rail transportation benefit the livability and sustainability of communities.

10.1.1 Livability Principals

In an effort to define the vision of livability, the U.S. Department of Transportation outlined six principles:

- **Transportation Choices** – Provide more transportation choices to decrease household transportation costs, reduce dependence on oil, improve air quality and promote public health;
- **Housing Choices** – Expand location and energy efficient housing choices thereby increasing mobility and lowering the combined cost of housing and transportation;
- **Neighborhood Access** – Improve economic competitiveness of neighborhoods by providing reliable access to employment centers, educational opportunities, services and other basic needs;
- **Community Revitalization** – Target federal funding toward existing communities – through transit-oriented development and land recycling – to revitalize communities, reduce public works costs and safeguard rural landscapes;
- **Future Growth Planning** – Align federal policies and funding to remove barriers to collaboration, leverage funding and increase the effectiveness of programs to plan for future growth; and,

- **Encourage Non-motorized Transport** – Enhance the unique characteristics of all communities by investing in healthy, safe and walkable neighborhoods, whether rural, urban or suburban.

10.1.2 Shifting Federal Emphasis

Recent transportation initiatives at all levels of government have started to shift the focus of transportation to the livability and sustainability of a community. Federal surface transportation policy started recognizing livability enhancements through multimodal or intermodal advancements within the transportation system. In 1991 the **Intermodal Surface Transportation Efficiency Act (ISTEA)** required states and Metropolitan Planning Organizations (MPOs) to “explicitly consider, analyze as appropriate and reflect in the planning process international border crossing and access to ports, airports, intermodal transportation facilities and major freight distribution routes.” The **Transportation Equity Act for the 21st Century (TEA-21)** of 1998 and the **Safe, Accountable, Flexible, Efficient, Transportation Equity Act: a Legacy for Users (SAFETEA-LU)** of 2005 carried forward the intermodal focus of the previous legislation.

Another step toward integrating transportation planning and development was the 2009 initiative between the U.S. DOT, the U.S. Department of Housing and Urban Development (HUD), and the U.S. Environmental Protection Agency (EPA) to form the **Partnership for Sustainable Communities**. This landmark partnership brought these agencies together and created a pledge to ensure that housing and transportation goals are met while simultaneously protecting the environment, promoting equitable development and helping to address the challenges of climate change.

10.1.3 Economic Impacts vs. Social-Environmental Impacts

This section emphasizes the *social-environmental* impacts of rail service as opposed to the *economic* impacts of rail service, as discussed in the preceding section. Often used interchangeably, the two concepts are notably different. The measurement of *social-environmental* impacts addresses hard-to-quantify issues. For example, the increased comfort and convenience of rapid transit is difficult to quantify in monetary terms. Second, rail transport negatively affects land development, but is less obtrusive than freight moved by trucks. Third, as part of a comprehensive development plan, rail encourages smart growth development, i.e. development planned to enhance the economy and while protecting the environment.

Conversely, economic *impacts* reflect the jobs, income, value-added, and output associated with rail transport. These economic impacts associated with rail transport are presented in the previous section, and are quantified in terms of *rail transport service* and *rail trade-users*. While the modest *rail transport service* impacts pertain to the provision of rail service, the much greater *rail trade-user* impacts reflect the quantifiable jobs, income, etc., of firms that *benefit* from rail transport as well as highway transport, electricity, schools, etc.

10.2 The Role of Rail Service

Passenger and freight rail plays an important role by providing transportation choices, enhanced economic competitiveness, community support, and improved access for communities and neighborhoods. Passenger rail services can strengthen the intermodal transportation system, creating new options for users as they combine different transportation modes to complete a trip. Attractive multimodal trip options require solid and convenient connections between the different modes of travel.

Currently, passenger and freight rail transport faces shortcomings when competing with auto, air, and truck travel. These shortcomings are often due to rail being less convenient and less connected than other modes of travel. However, increased demand and continued reliance on auto and air travel for passenger trips and on trucks for freight movement can lead to negative impacts and degradation in livability, including increased congestion, additional safety concerns, and the depletion of natural resources.

The following subsections highlight the socio-environmental impacts associated with passenger and freight rail transport.

10.2.1 Passenger Rail

Passenger rail enhances intermodal connectivity in a variety of ways. Examples include direct connections between passenger rail and local transit, other intercity modes, park-and-ride facilities, or commercial air service. An intermodal transportation system which includes passenger rail is most effective when it provides:

- Expanded line-haul options between major urban areas (e.g., 50 miles apart and greater);
- Seamless transfer between transportation modes, that is, seamless intermodal connections (e.g., between intercity rail and transit at stations);
- The ability to connect to an extended transportation network; and,
- A high frequency of service among the different modes.

Generalized impacts of passenger rail intermodal connectivity include:

- Expanded market reach of passenger rail service;
- Increased public transit ridership, leading to potential air quality impacts and emissions reductions;
- Reduced roadway congestion, providing relief to congested highway corridors;
- Improved financial performance of existing transit systems, resulting from increased ridership and fare box revenues;
- Creation of synergies that increase public transportation ridership and spur business development and investment in or near an intermodal facility;

- New or upgraded stations that serve as gateways to communities and a focus for development; and,
- Increased transportation system efficiency through reduced service redundancies and more transfer opportunities that increase trip options.

Intercity rail provides an environmentally friendly alternative and opportunity to connect the state's major economic centers. Access would be improved for jobs, goods and services and would expand the labor pool and market areas for business.

With respect to increased passenger rail services, various economic benefits can be anticipated. Foremost is the shifting of personal trips from motor vehicles to trains, with the resulting benefit in fuel savings and reduced congestion. Second, revitalized rail stations preserve historic sites and boost civic pride. They also offer city planners an incentive to transform the city landscape with station area-oriented development. This development can be a catalyst for new economic activity, resulting in more jobs and higher property values. In addition to economic growth around the station, the station itself can be used for commercial activities, museums and as a cultural center. Furthermore, smart growth will serve to curb urban sprawl and preserve closer-in agricultural land uses. The result could be restoration of greenbelts which years ago typically supplied cities with much of their fresh fruits and vegetables.

Mississippi has several examples of the benefits of station restoration. State and local communities efforts to restore rail stations have boosted civic pride and provided valuable new public spaces. McComb with its station facilities occupied by the McComb Railroad Museum, the Pike County Chamber of Commerce and the Industrial Development Foundation is an example. Mississippi also has several examples of station restoration as a catalyst for area development. Restoration of the Jackson, Meridian and Hattiesburg stations has generated substantial development in the area around the stations. Jackson and Meridian are key examples of rail stations providing a location for improved intercity bus stations and local transit central transfer points.

10.2.2 Freight Rail

Short line freight railroads provide access to the national rail system for shippers along their lines. Large railroad intermodal systems deliver cost advantages to shippers over trucks. Also, freight rail plays a significant role in relieving truck traffic on the state's highway system. These improved efficiencies can work to reduce congestion and improve Mississippi's ability to increase its development potential.

Rail enhancement would also help create a more sustainable freight network. In 2006, rail shipments account for about 3 percent Mississippi's 62 million tons of intrastate freight, with the remainder moving mostly by highway. Shifting some of this intrastate freight from truck to rail, especially heavy bulk shipments, would not only help reduce roadway congestion and highway

maintenance costs but also result in less pollutants and a lower cost due to better efficiencies in fuel per ton-mile.

Improved access to the national rail system, whether through short lines or new intermodal centers, will generate economic advantages to shippers and to the state as a whole. The cost of rail transportation per ton-mile is less than the typical alternative, which is truck. Transportation cost savings can be spent on more manufacturing, which can increase payrolls, which in turn would generate multiplier impacts to the service sector.

Jackson, with rail lines radiating in many directions, would seem to be a potential location for an inland port, expanded domestic intermodal and load center. Short-distance shuttle trains would transport freight to Vicksburg or Gulfport removing tonnage from state highways. The potential benefits of this diversion would include fuel cost and highway maintenance savings, while avoiding highway accidents and related costs. Development of expanded intermodal facilities and load centers must be done in coordination with freight railroads as rail capacity improvements required for short-distance rail traffic often have a low rate of return for the railroad. Most of the benefits from the expansion of short-distance rail freight flow to the public through reduced congestion and reduced highway expansion/maintenance costs rather than to the railroad in the form of freight revenue.

10.2.2.1 Freight Rail Improvement Challenges

Shifting more intrastate freight to the rail mode does face a challenge. The freight railroads have weathered the current recession in better shape than many other industries. The longer term outlook is also very positive. The railroads' financial health has been achieved through extraordinary gains in productivity and a selective focus on key, high volume traffic lanes that generate strong economic returns to rail investors. The flip side of this trend is that many smaller volume freight shippers can no longer access rail service for their needs and must instead increasingly rely on the trucking mode.

Railroads have transformed from being general providers of freight service for most industries to specialized, high volume purveyors of mile-long "mega-trains" that may have little apparent connection to the economic wellbeing of the communities they traverse. Some of the carload traffic has not been lost by the rail industry, but shifted to intermodal and trucked to major intermodal or load centers. The local railcar gathering function, never the most profitable portion of a logistics service, has been shifted from private to public infrastructure. This benefited the railways by freeing up track capacity for the growth of long-distance higher revenue traffic without requiring capital investment.

Rail carriers do participate in the movement of smaller volume freight, but only as wholesalers of train service capacity to short lines, large truckload or express freight service firms such as JB Hunt and United Parcel Service.

A railroad must not only provide its own fixed physical network but must pay for maintenance and property taxes. A decision to invest in line capacity between two points is, by its very nature, a long term decision. The railroad world is, then, by necessity forced into a very conservative model with respect to capacity, traffic mix, volumes, profit margins and long-term stability. Railroads cannot risk capital investment for low margin short-haul traffic. Shorter haul, smaller volume clients are abandoned or “priced away.” Railroad efficiency is increased, average costs are reduced and investors are rewarded, but highway truck volumes are increased.

The challenge for government is that the railroad commercial priorities and financial realities do not always align where the major benefits flow to the public at large. A strategy undertaken by many states is to undertake investments that maintain the low volume feeder networks and create additional mainline capacity so that short-haul traffic does not reduce the railroads’ capacity for higher revenue long-distance traffic.

10.3 Land Use and Smart Growth

To improve the efficiencies of both land use and the transportation network many developers and government planning agencies have been developing strategies for smart growth.

10.3.1 Smart Growth Enabled

Smart growth refers to planned development efforts that can enhance the economy, serve the community and protect the environment. In general, these efforts focus on city centers, older suburbs, and new developments that have central cores, are transit- and pedestrian-friendly, have a mix of housing and commercial uses, and preserve open space and natural resources.

Demographic changes and environmental and fiscal concerns have led many communities to adopt smart growth strategies as part of their comprehensive planning efforts.

Smart growth, “creating a sense of place”, is often defined two ways:

- **“New urbanism” or traditional neighborhood development:** Refers to creating pedestrian friendly walkable neighborhoods radiating away from the train station on an interconnected street grid that includes a mix of development (shops, offices, housing, etc.), higher density, central open spaces for community recreation and gatherings, safe walking and cycling paths, and convenient access to transit and auto travel.
- **Transit-oriented development (TOD):** Refers to higher density, mixed use, compact development (generally in major cities) that is oriented around rail/transit stations. Because access to public transportation requires only a short walking distance, the increased density of TOD enables a higher number of transit or walking trips.

These alternative development options are finding favor as high gas prices highlight the cost of low-density, car-oriented development (urban sprawl) especially as it has manifested over the last two decades with development spreading 50 to 70 miles from urban centers.

10.3.2 Transportation and Land Use Linkage

Transportation and land use are indisputably linked. Land use patterns can support or encourage the use of one type of mode while transportation systems can support and encourage the development of a certain type of land use. Enhancements to the rail network will drive land use decisions that support the availability of rail and encourage appropriate development around station locations.

This development encourages mixed-uses with higher densities, compact nature, an integrated mobility system and a more pedestrian-friendly environment. Smart growth and the development around train stations facilitates travel patterns that are more energy efficient than auto-oriented development and contribute to a more livable, sustainable community.

10.3.3 Transportation Network Resilience

Adding a rail option creates a more resilient transportation network. Resilience is the ability of the transportation network to accommodate variable and unexpected conditions without failure. Factors affecting network resilience can include safety, availability of alternatives, independence from finite resources, and ability to meet economic, social, or environmental goals under a range of unpredictable future scenarios. Continued expansion and enhancements to the rail network would provide additional alternatives for mobility within the state, contributing to the availability of alternatives for the movement of goods and people.

The efficiency of the rail mode contributes to its resilience. Significant economic growth is expected in the Gulf Coast mega region. This increase will be one of the major factors influencing the growth of vehicle miles traveled (VMT). According to the U.S. EPA, transportation accounts for 25 percent of all U.S. greenhouse gas (GHG) emissions. Because there is a direct correlation of fossil fuel usage to air pollution and GHG, the anticipated growth in VMT means an equally large increase in greenhouse gas emissions absent any change. While there are technologies available to reduce greenhouse gas emissions per VMT (e.g. alternative fuels, hybrid and electric vehicles, CAFE standards etc.), shifting personal travel and freight movement to more fuel efficient modes can result in a substantial reduction in greenhouse gas emission per mile traveled. Shifting freight and passenger traffic to rail can also help relieve congestion and lower emissions that result from additional fuel use due to traffic congestion.

10.3.4 Land Use and Economic Development Impacts

The rail mode is less land intensive than other modes. Each line of track offers far more capacity than a highway lane. New control systems often allow rail capacity to be expanded without the need to add additional track. Because of peaking and the use of a highway lane in only one direction, highway expansion generally means adding at least two lanes, while rail expansion often requires just one additional track or sidings. Also, many rail rights-of-ways are wide enough to allow tracks to be added without requiring adjacent land. Finally as rail traffic grows,

lightly-used rail lines, once the main lines of predecessor railroads (CN's Grenada Subdivision, now the Grenada Railway, for example), could be upgraded to carry overhead freight. The improved service on these upgraded rail lines could become the focal point for local industrial investment and improved agricultural transport making online communities and their businesses more competitive.

Both freight and passenger rail improvements can further economic development. More and faster passenger trains can increase mobility options for intercity travelers, commuters and the transit dependent. More efficient access to the freight rail system, such new intermodal facilities and state support of short lines, can lower transportation costs for shippers. Benefits resulting from passenger and freight rail investments can thus enhance the competitiveness of the state and the region. These benefits will serve to retain existing work forces and business, and attract new ones, bolstering economic development.

10.3.5 Rail Development Challenges

Rail development challenges involve many issues ranging from passenger station development to freight rail activity to rail line barriers, as well as a wide range of other issues.

10.3.5.1 Passenger Station Issues

Improving passenger rail and focusing development around rail stations is not without challenges. These challenges are land use compatibility, traffic, community barriers, financial and political barriers.

Land Compatibility – The biggest issue is the compatibility of different land uses. Specifically with smart growth development and rail service, the proximity of residential or commercial land uses to rail facilities presents environmental concerns, such as noise and vibration, particularly impacting residential areas. There may also be a conflict between expanding rail passenger usage and expanding freight facilities to increase rail freight usage. As rail lines and facilities are generally located around industrial areas, zoning regulations could arise as an issue. Good coordination between the various agencies involved is necessary to implement zoning more supportive of higher-density development. Also, the presence of existing infrastructure, such as out-of-service rail facilities, could interfere with land assembly and the creation of compact development.

Auto-Oriented Development – The auto-oriented development patterns have largely displaced residential uses from the traditional city center, creating additional challenges related to residential proximity to stations. This issue will need to be addressed when communities decide upon appropriate locations for future train/transit stations and where future residential uses are concentrated.

Smart growth and station area development aim at reducing auto congestion through compact development, which promotes transit use by increasing accessibility and connectivity to transit. However, development concentrated in one area invariably leads to more traffic and worsening levels of service. While increased activity in freight and passenger rail can divert existing auto and truck trips from the roadway network to rail, it can also contribute to additional roadway congestion at ports/intermodal facilities and at-grade crossings. Also while the population as a whole benefits from the shift to rail, certain segments of the population face additional livability burdens as a result of this shift.

Safety – Another issue that arises with smart growth development of rail stations is safety. Concentrated development can result in high volumes of traffic, including not only auto traffic but also bike and pedestrian, moving across the nearby rail facility and increasing the potential for collisions. At-grade crossings can also act as barriers for emergency response services such as fire and medical. If rail activity increases in urban areas and grade separations are not feasible, more occurrences of roadway blockages could result, impacting the ability for these services to respond in emergency situations. In addition, fencing or other barrier devices should be considered to reduce the number unauthorized footpath crossings used by trespassers.

10.3.5.2 Freight Rail Activity Issues

Increased freight rail activity can help replace some of the existing truck travel. However, the connection between the rail network and the truck network typically occurs at ports or intermodal facilities. These facilities are usually located away from highway and interstates, which are designed to appropriately handle these larger vehicles. As a result, this separation forces the local roadway system to function as the link between these facilities. Local streets often have more congestion due to traffic signals, poor turning radii, inadequate overhead clearances, and narrow bridges, making access to terminals difficult. Larger volumes of rail freight traffic can thus lead to increased congestion on local streets. Congestion degrades the efficiency of truck and rail carriers, which in turn reduces the quality of service to shippers. Overcoming these barriers will require local commitment and support for improvements ensuring proper connectivity with minimal negative impact.

10.3.5.3 Rail Lines Barrier Issues

Rail facilities that run through a developed area can in many cases act as a barrier. Such can occur when tracks are not easily crossed from one side to the other because of safety concerns. Long, slow moving freight trains can split communities for excessive amounts of time, triggering long delays for motor vehicle traffic, including emergency services, needing to cross the tracks.

Improvements of rail lines for intercity passenger service with attendant grade crossing closures and additional fencing will create barriers through neighborhoods compared to the existing rail lines with many crossings and little fencing. However, future growth in freight traffic on Mississippi's rail lines, if left unimproved, could create the same issue. Improving the rail line

for intercity rail can bring planning and improvement resources to address community concerns, offset the grade crossing closures, install fencing and other safety improvements, and implement Quiet Zones – all of which can help link the community together.

10.3.5.4 Other Issues

Other more general issues that may arise when trying to implement development around rail stations may include financial constraints related to the revenue needed to finance infrastructure; design, land use and regulatory issues; multi-agency involvement, often requiring coordination across multiple levels of government; and political barriers that prevent stakeholders and the community from reaching consensus.

10.3.5.5 Rail Development Challenge Summary

The largest impacts on land use by railroads are the noise and air pollution generated by trains. As a result, few people want to live near rail lines and yards. As disagreeable as these factors are, the levels of noise and air pollution will not worsen dramatically any time soon.

As noted in Chapter 6, rail traffic is expected to increase by approximately 2 percent per year for the foreseeable future – a rate that mirrors the growth in the national economy over recent years. However, trains can accommodate additional growth by getting longer. So the growth of trains is really a step function: only when a train gets so long will length require a second train. So train growth will occur at a slower rate than rail traffic growth.

Major rail interchange points in Mississippi tend to be in cities: Jackson, Meridian, Tupelo, and Hattiesburg and Gulfport. While rail activity is more intense in these cities than in rural areas, much land suitable for new residences surrounds these cities, and thus options to live away from rail related noise and air pollution impacts are many.

10.4 Livable and Sustainable Communities

Livability can be thought of as a combination of various attributes that define how attractive a given place is to live. Researchers have found that the attributes associated with livability include clean air and water, safe streets, positive race relations, affordable homes, quality public schools, greenery and open space, uncongested roads and low taxes, among other things. The transportation system's ability to efficiently and safely move people and goods, without negatively impacting the environment, plays a crucial role in how people view and rate the livability and sustainability of an area.

While rail generates pollution and noise that negatively affect communities, such effects are often less than those associated with a trucking alternative. Conversely, passenger rail transport generates positive effects, or benefits, that promote livable and sustainable communities. Further, freight rail promotes a community's livability and sustainability through market access. This section begins with a review of rail pollution and noise issues, and associated mitigation methods

followed by discussion of the positive benefits of passenger and freight rail on local community livability/sustainability.

10.4.1 Pollution and Noise

Train air pollution and noise deteriorate the quality of life of communities along rail lines. However, diesel locomotives are getting ever more efficient and are burning cleaner diesel fuels. Also, railroads are implementing “genset” locomotives, mostly for yard work like switching and assembling trains. The classic diesel electric locomotive has one large diesel engine which generates electric power for the traction motors sitting atop wheel sets. However, a genset locomotive has two or three smaller engine-generators that are programmed to start only when needed. Thus, improvements in both the fuel and locomotives are working to mitigate the worst effects of train related air pollution.

One means to combat train horn noise is the implementation of railroad Quiet Zones. These are zones involving one or more highway-rail crossings where the locomotive engineer is not obligated to blow his horn approaching the crossing(s)³³. The procedures whereby a community can implement a Quiet Zone are specified by the Federal Railroad Administration³⁴. Typically, crossing improvements are required to enhance safety. Improvements typically include four-quadrant gates, medians on approaches along with gates at the crossings, street closures, etc. Once the improvements designs are reviewed by the FRA and implemented, a Quiet Zone can be established. As a result, locomotive engineers will not blow their horns approaching the zone, except when necessary to rectify an unsafe condition, such as pedestrians traversing the crossing despite the gates and flashing lights. Quiet Zones are generally implemented by the local community.

10.4.2 Passenger Rail and Sustainable Communities

Passenger rail stations provide major opportunities for focused growth, especially in urban areas. Stations can function as local connection points for feeder modes and create downtown transportation hubs for the community. This pedestrian friendly development pattern reduces fuel use, air pollution and greenhouse gas emissions. It also reduces urban sprawl by satisfying housing and business needs in a more efficient manner.

10.4.2.1 Neighborhood Revitalization

Many of the areas around rail stations are existing neighborhoods. Improved rail service can be a catalyst for the revitalization of these older neighborhoods and improving housing stock. This revitalization can improve the quality of life by bringing not only improved transportation but new retail and service providers to the neighborhood.

³³ Federal regulations specify that trains horns be sounded while trains approach and enter highway-rail crossings.

³⁴ <http://www.fra.dot.gov/rpd/freight/1318.shtml>.

Properly planned, station areas increase the value of adjacent property, attract increased investment in existing development, and encourage new projects on vacant or underutilized lands in the area, further contributing to the local economy. Reducing urban sprawl will reduce the pressure to develop farms and forest lands. Also compared to adding additional highway lanes, expanding rail lines in rural areas will require little, if any, additional land.

10.4.2.2 Betterment of Public Health

Transportation planning and design has a direct impact on community health, livability and sustainability. The nation's dependence on automobiles in metropolitan areas has resulted in more sedentary lives. The Surgeon General reports that over 60 percent of U.S. adults are overweight or obese. The focused growth around rail stations foster communities where destinations are within easy walking or bicycling distance. The Surgeon General indicates that walking or cycling, key methods of access to rail stations, are great ways to build physical activity into a daily routine.

Public transit use is also associated with healthy behavior including higher rates of walking. A recent study concluded public transit users walk 8.3 more minutes per day on average compared to those who do not, leading to lower rates of obesity. These health implications further show rail's ability to contribute to a more livable environment and encourage healthier land use patterns.

10.4.2.3 Enabling Multimodalism

Rail transportation plays a prominent role in the overall statewide multimodal network. By increasing its ability to safely and efficiently move people and goods within the state, rail transportation can help support local, state and federal initiatives aimed at creating more livable communities. Passenger rail service can create a sustainable transportation option for Mississippi's residents, encourage compact, smart growth development, help reduce the dependence on the automobile, and reduce VMT. New intercity rail stations should be planned and designed to accommodate connecting local and regional transit, offer safe pedestrian and bicycle connections, include drop-off facilities and provide sufficient parking and good road access. Station communities and local transportation agencies play an important role in the success of these station areas.

10.4.3 Freight Rail and Sustainable Communities

Freight rail also plays a prominent role in the livability and sustainability of a community. The ability to efficiently transport goods and create access to economic centers is critical to the overall success of a region's economy. Time wasted due to transportation inefficiency and congestion has significant impacts on profitability and the ability to attract new business to a region.

The efficiency of rail freight is especially important in rural areas where agriculture, local industries and communities rely on freight shipping. Many communities have seen a loss or reduction in rail freight services in recent years. Improving, expanding and preserving the rail network can improve the competitive stature of local industries, agriculture and communities. A revitalized rail line can lower shipping costs, provide pricing power for local industries and agriculture vis-à-vis trucking, provide redundancy in the transportation network, and shield local industries and agriculture from predicted increases in the cost of fossil fuel.

10.5 Efficiency, Environmental and Safety Comparisons

Shipper/receiver decision on which freight mode to use depends on several shipment and commodity factors, which often dictate which transport mode is used. The energy use and energy costs associated with rail freight movement are significantly less than highway freight movement. Similarly, other external costs associated with accidents are significantly less for rail transport than for truck. So, while rail transport may not always be feasible, the decision to use rail transport when possible saves significant business transport costs, environmental damage costs and accident costs.

10.5.1 Factors Affecting Rail Freight Transport

Several factors affect modal transport decisions such as shipment distance, size, direction, cost, commodity type, and time sensitivity:

- *Shipment Distance* – Rail and water borne freight transport typically requires long-distance movements spanning several hundred miles.
- *Shipment Size* – The larger the shipments (i.e., over several hundred tons) the greater the attractiveness of rail or water transport
- *Shipment Direction* – Rail shipments are partially limited to moving along the Class I rail lines and their cost-effective secondary modes (i.e., truck) and intermodal connections.
- *Shipment Cost* – Total transport cost including secondary modes (i.e., truck) and intermodal connections (i.e., rail-to-truck and any storage).
- *Commodity Type* – Typically non-perishable bulk, break-bulk or large equipment with a high weight/large volume-to-value ratio.
- *Low time sensitivity* – Shipments span several days to weeks instead of one to two days or hours via truck. Therefore, rail transport does not directly operate within the just-in-time freight services sector. However, rail transport can support just-in-time needs through commodity warehousing.

Commodities that meet these factors are shipped at a significantly lower cost per ton. The freight transport unit costs per ton multiplied by the large shipment volumes result in huge cost savings compared to truck. For example, it takes 70 large truck semi-trailers to carry the same amount of dry cargo as 16 rail cars (approximately 4.5 trucks per rail car), as shown in **Table 10-1**.

Similarly, it takes 144 trucks to carry the same amount of liquid cargo as 46 rail cars (approximately 3.0 trucks per rail car).

Table 10-1: Unit Comparisons

Mode	Dry Cargo 1,750 Tons	Liquid Cargo 27,500 Barrels
Barge	1	1
Rail Car	16	46
Truck	70	144

National Waterway Foundation and Texas Transportation Institute;
<http://www.nationalwaterwaysfoundation.org/study/public%20study.pdf>

10.5.2 Energy Use and Costs

Numerous sources from a wide range of perspectives conclusively indicate that rail transport saves energy and, hence, is vastly more cost efficient than truck highway transport.

U.S. Department of Energy – According to the U.S. Department of Energy’s 2008 *Transportation Energy Data Book* intercity rail passenger service is 18 percent more efficient than commercial aviation and 24 percent more efficient than the automobile. Amtrak onboard surveys indicate that the majority of rail passengers are traveling alone. This is because rail passenger service tends to be more economically attractive for the solo traveler than the automobile. As a key priority, focusing on shifting solo travelers from the auto to rail yields the greatest energy and greenhouse gas savings.

Association of American Railroads – The AAR has noted that in 2008 one gallon of diesel fuel moved a ton of freight by rail 457 miles – four times the efficiency of trucks. The U.S. Environmental Protection Agency estimates that for every ton-mile, a typical truck emits three times more nitrogen oxides and particulates than a train. Related studies suggest that trucks emit six to 12 times more pollutants per ton-mile than railroads, depending on the pollutant measured. The American Society of Mechanical Engineers found that 2.5 million fewer tons of carbon dioxide would be emitted into the air annually if 10 percent of intercity freight now moving by highway were shifted to rail.

American Association of State Highway Officials – AASHTO noted that for each 1 percent of long-haul freight currently moving by truck, if moved by rail instead, fuel savings would be approximately 111 million gallons per year; and annual greenhouse gas emissions would fall by 12 million tons. If 10 percent of truck traffic went by rail – via intermodal movements involving both railroads and trucks – the cumulative estimated GHG reductions from 2007 to 2020 would be 210 million tons. Finally, rail lines can be electrified, yielding additional efficiencies from regenerative braking, and creating opportunities for alternative power sources. Thus shifting of traffic to the rail mode will reduce the energy intensity of transportation while somewhat insulating users from dramatic changes in fuel prices.

National Waterway Foundation – This organization found that fuel usage and associated transport costs vary considerably given the various cargo carrying capacities and the different vehicles required to transport goods. For example, one gallon of fuel can transport one cargo ton approximately 160 miles by truck. Rail can transport the same ton of cargo 2.5 times as far, 410 miles (roughly similar to the AAR figure) on a gallon of fuel. As seen in **Table 10-2**, the energy transport costs of rail transport are approximately 40 percent those of truck, based on a \$3.00 price per gallon. The rail transport cost comparisons are even greater when considering: (1) labor costs; (2) operation and management costs associated with both vehicles and the infrastructure; and (3) safety and environmental costs.

Table 10-2: Ton Transport Distance and Energy Cost per Gallon of Fuel

Mode	Ton-Miles	\$/Ton-mile
Tug Barge	580	\$0.005
Rail Locomotive	410	\$0.007
Truck	160	\$0.019

*National Waterway Foundation and Texas Transportation Institute;
<http://www.nationalwaterwaysfoundation.org/study/public%20study.pdf>
 Assume \$3.00 cost per gallon*

10.5.3 Environmental Damages and Costs

Comprehensive and easily digestible data on environmental impacts and costs by mode are difficult to find. Nonetheless, the various data sources indicate that freight transport by rail and water vessels generate significantly less environmental impacts and costs than truck transport. Such information follows the general efficiency trends regarding trip distance and costs per ton-mile: both rail and water transport are significantly more efficient than truck.

Regarding fine particle matter with a diameter of 2.5 microns or less (PM2.5), the ton impact per million ton-miles of rail and water transport is approximately one-tenth of truck transport (0.0158 and 0.0128 versus 0.1126, respectively). Similarly, the nitrogen oxide (NOX) emission tons per ton-mile traveled for rail and water transport approximate a fifth of truck transport (0.5954 and 0.5171 versus 2.8549, respectively), as seen in **Table 10-3**. Combined, PM2.5 and NOX emissions generate environmental damages per million ton-miles of \$41,480 for truck transport, which is several times greater than rail (\$6,710) or water (\$5,610) transport damages.

Further manmade greenhouse gases include CO₂ (the dominant emission), methane, nitrous oxide and fluorinated gases. Similar to the PM2.5 and NOX emissions, the impact of both rail and water freight transport is a fraction of truck transport.

Table 10-3: Environmental Damages and Costs per Million Ton-Mile, by Mode

	Trucks	Rail Locomotives	Waterborne Vessels
Ton Miles (Millions)⁽¹⁾	2,040,000	1,819,633	274,367
PM2.5 Emissions			
Tons (Total)	<u>229,754</u>	<u>28,690</u>	<u>3,520</u>
Tons per Million Ton-Miles	0.1126	0.0158	0.0128
Damages per Ton	<u>\$251,466</u>	<u>\$251,466</u>	<u>\$251,466</u>
Damages per Million Ton-Miles	\$28,320	\$3,960	\$3,230
NOX Emissions			
Tons (Total)	<u>5,824,060</u>	<u>1,083,320</u>	<u>141,865</u>
Tons per Million Ton-Miles	2.8549	0.5954	0.5171
Damages per Ton	<u>\$4,610</u>	<u>\$4,610</u>	<u>\$4,610</u>
Damages per Million Ton-Miles (\$000)	\$13,160	\$2,740	\$2,380
CO₂ Emissions			
Tons (Total)	<u>468,702,800</u>	<u>52,690,500</u>	<u>5,286,600</u>
Tons per Million Ton-Miles	229.76	28.96	19.27
Damages per Ton ⁽²⁾	n/a	n/a	n/a
Damages per Million Ton-Miles (\$000)	n/a	n/a	n/a
Summary Damages per Million Ton-Miles⁽³⁾	\$41,480	\$6,710	\$5,610

Source: Surface Freight Transportation; A Comparison of the Costs of Road, Rail, and Waterways Freight Shipments That Are Not Passed on to Consumers; GAO, January 2011;

<http://www.gao.gov/new.items/d11134.pdf>

Monetary values in 2010\$

Notes:

(1) Trucks and Locomotives reflect 2007 ton-miles, versus year 2005 for waterborne vessels

(2) Damages per ton not available

(3) Excludes CO₂ damages

10.5.4 Accident Rates and Costs

The rail mode is also one of the safest transportation modes. Each year more 30,000 deaths and 2 million injuries from highway collisions are reported by the National Highway Traffic Safety Administration. In 2008 more than 700 highway-related deaths were recorded in Mississippi. In addition to the overwhelming tragedy caused by death, there is also a cost associated with these losses. The economic cost of these collisions to the U.S. economy is more than \$200 billion – more than 2 percent of the U.S. gross domestic product. Much of this cost is borne by the public at large either through public expenditures (law enforcement, medical, disability payments, etc.) or insurance premiums.

Per passenger-mile traveled rail transportation is exceptionally safe with much lower death rates than automobiles. As reported by the National Safety Council in 2000, the fatality rate for the automobile was 0.80 deaths per 100 million passenger miles compared to 0.03 for passenger rail. The expansion of rail service can provide a much safer travel option. Freight rail transportation is also very safe and, as reported by the Federal Railroad Administration, the multi-year trend is

positive with all reportable accidents (derailments, fatalities, injuries, etc., on the national rail system) declining by almost one-quarter between 2006 and 2009.

Other external costs associated with freight transport include accidents. Comparisons of fatalities and injuries to ton-miles indicate an even greater external cost savings benefit associated with rail and water transport versus that of truck. Average data between 2003 and 2007 suggest the average fatalities of rail transport per billion ton-mile of freight transport (0.39) was 15 percent that of truck transport (2.54), as shown in **Table 9-4**. Even more dramatic, the 3.32 injuries per billion ton-miles of freight train transport were only 6 percent that of truck (56.05). On a cents-per-ton-mile basis, rail costs range between approximately half to one-tenth that of truck. Clearly, notable industry and societal cost savings result from the use of rail transport versus truck.

Table 10-4: Accidents and Costs per Million Ton-Mile, by Mode

	Trucks	Trains	Waterborne
Injuries	5,069	683	7
Injuries	111,800	5,747	26
Ton-Miles (Billion)	1,997	1,739	587
Fatalities per Ton-Miles (Billion)	2.54	0.39	0.01
Injuries per Ton-Miles (Billion)	56.05	3.32	0.05
Costs per ton-mile (in 2010 cents)	0.11 to 2.15	0.24	n/a

Source: Surface Freight Transportation; A Comparison of the Costs of Road, Rail, and Waterways Freight Shipments That Are Not Passed on to Consumers; GAO, January 2011; <http://www.gao.gov/new.items/d111134.pdf>

Note:

1. Figures represent averages between 2003-2007

11. RAIL SAFETY AND SECURITY

11.1 Introduction

Over the past decade rail safety and security has been a high priority by both rail carriers and public agencies. Rail safety has historically been a priority due to its potential impacts on the general public and the efficiency of rail operations. The focus of rail security has been threats posed by terrorists using the rail mode to disrupt transportation in general or harm large numbers of citizens.

A number of federal and Mississippi state agencies, in concert with the state's rail operators, continue to make progress with regard to rail safety and security. The following is a summary of these issues and activities on-going in Mississippi.

11.2 Rail Safety

Rail safety requirements are provided through a combination of federal and state laws. Most safety-related rules and regulations fall under the jurisdiction of the Federal Railroad Administration³⁵, as outlined in the Rail Safety Act of 1970 and other legislation, such as the most recent Rail Safety Improvement Act of 2008. A discussion of MDOT's rail safety program and its history appears in Section 3.

Rail safety issues are generally comprised of highway-rail grade crossing safety, rail safety inspection, rail trespass, and other requirements regarding the movement of hazardous materials and implementation of new technology. Although these issues fall under FRA's jurisdiction, state agencies are heavily involved in efforts to improve the safety of the rail system.

Railroad incidents/accidents for the last full 10-year period 2000-2009 in Mississippi are summarized in **Table 11-1**.

These accidents include train derailments, collisions and any accident involving railroad employees or trespassers that occur on railroad property and result in fatalities, injuries or property damage exceeding an amount established by FRA; and highway-rail grade crossing accidents or incidents. Non-fatal conditions are reportable injuries occurring to employees or trespassers. Because property damage-only accidents are included, there is no direct correlation between the number of fatalities/non-fatalities and the total number of accidents.

³⁵ The FRA is the federal agency with safety oversight responsibility for the national railroad system.

Table 11-1: FRA Reportable Railroad Incidents 2000-2009 in Mississippi

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Total Incidents	250	226	207	176	209	200	171	164	143	110
Deaths	17	33	24	12	19	22	17	9	18	14
Injuries	120	115	95	95	152	106	86	83	117	81
Train Accidents	61	49	38	33	57	50	36	37	34	22
Deaths			1		1	4				
Injuries		4	1	1	49	7		5		10
Highway-Rail Incidents	113	102	97	91	88	79	82	69	70	42
Deaths	15	22	14	9	12	10	13	3	14	8
Injuries	44	47	31	44	44	30	37	23	77	24
Other Incidents	76	75	72	52	64	71	53	58	39	46
Deaths	2	11	9	3	6	8	4	6	4	6
Injuries	76	64	63	50	59	69	49	55	40	47

Source: FRA Office of Safety Analysis

Observable is a general downward trend in all three kinds of reportable incidents: train accidents, highway-rail accidents, and other incidents, which are other than train accidents or crossing incidents that cause physical harm to persons. Mississippi's experience with an across-the-board decline in FRA reportable incidents mirrors that of the U.S. as a whole (**Table 11-2**).

Table 11-2: FRA Reportable Railroad Incidents 2000-2009 in All States

Incidents	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Total Incidents	16,919	16,086	14,403	14,370	14,523	14,311	13,793	13,905	12,864	11,089
Deaths	937	971	951	865	891	884	903	851	804	707
Injuries	11,643	10,985	11,103	9,264	9,194	9,550	8,790	9,638	8,974	7,852
Train Accidents	2,983	3,023	2,738	3,019	3,385	3,266	2,995	2,690	2,471	1,894
Deaths	10	6	15	4	13	33	6	9	27	4
Injuries	275	310	1,884	232	346	787	220	307	324	118
Highway-Rail Incidents	3,502	3,237	3,077	2,977	3,085	3,066	2,942	2,776	2,422	1,924
Deaths	425	421	357	334	371	359	369	339	290	250
Injuries	1,219	1,157	999	1,035	1,094	1,053	1,070	1,057	977	729
Other Incidents	10,434	9,826	8,588	8,374	8,053	7,979	7,856	8,439	7,971	7,271
Deaths	502	544	579	527	507	492	528	503	487	453
Injuries	10,149	9,518	8,220	7,997	7,754	7,710	7,500	8,274	7,673	7,005

Source: FRA Office of Safety Analysis

11.2.1 Highway-Rail Grade Crossing Safety

The rail safety area most visible to the general public and for which the public is most exposed to potential harm from rail operations is the interface between the rail and highway systems at grade crossings. There are 4,209 highway-rail crossings in Mississippi, with 2,282 located on public roadways, 1,911 crossings on private roads, and 16 pedestrian crossings. Since the 2004 Mississippi State Rail Plan, MDOT has completed 316 grade crossing improvement projects.

MDOT has identified its current grade crossing projects, which are underway but not completed. Estimated costs for the projects are cited in **Table 11-3** by county.

Table 11-3: Current Grade Crossing Projects

County	Number of Projects	Estimated Cost (\$ thousands)
Leflore	2	\$362
Newton	1	26
Covington	1	28
Grenada	1	137
Pearl River	1	42
Harrison	15	2,300
Total	21	\$2,895

In addition, MDOT has identified future grade crossing improvement projects by county, with cost estimates, as shown in **Table 11-4**.

Table 11-4: Funded but Not Initiated

County	Number of Projects	Estimated Cost (\$ thousands)
Coahoma	1	\$250
Copiah	1	186
Forest	18	2,592
Greene	1	60
Hancock	7	1,036
Harrison	6	1,125
Holmes	1	85
Jackson	3	608
Jones	1	14
Lee	1	170
Lowndes	1	154
Newton	1	24
Perry	1	60
Rankin	1	45
Warren	2	500
Total	46	\$6,909

MDOT related that Pike and Simpson Counties have projects approved, but specific cost estimates are not yet available. The current and funded-but-not-initiated grade crossing improvement projects, totaling \$9.8 million, are itemized in **Appendix C**.

11.2.2 Rail Safety Inspection

The Federal Railroad Administration enforces federal regulations and standards that apply to track, signal, train control, motive power, equipment, operating practices, and hazardous materials. The federal Rail Safety Act of 1970 authorized states to work with FRA to enforce railroad regulations at their expense.

MDOT is the lead state agency for rail safety in Mississippi. As noted in Section 3, MDOT has five safety inspectors, whose duties include the following:

- Confer and cooperate with the railroads, other MDOT Divisions and Districts, the FRA, the FHWA and other governmental agencies in the development of plans, specifications and other contract documents for the construction of railroad signals and crossing surfaces;
- Seek to resolve differences of opinion and make recommendations relative to design, safety equipment improvements, local traffic and enforcement requirements;
- Submit written reports on inspections;
- Attend and participate in pre-letting and preconstruction conferences;
- Perform daily construction inspections in cooperation with project personnel to assure compliance with the intent of the contract;
- Prepare written reports on the construction inspections;
- Confer and advise with the MDOT Rails Division Engineer as to the necessity of railroad crossing signal and/or surface construction changes;
- Prepare reports to assure proper reporting and documentation of the work and to assure continual progress on the work in conformity with contract requirements;
- Attend final inspections of projects with representatives of the local MDOT District and representatives of the FHWA to determine the completeness of the work in accordance with contract provisions and requirements, see that the necessary documents are prepared and processed in the release of the contractor from maintenance responsibility and for the final acceptance of the completed work;
- Assist the MDOT Rails Division Engineer with claims submitted by the contractor;
- Participate in the Mississippi Operation Lifesaver Program;
- Inspect all tracks, crossing surfaces, pavement markings and signs for conformity with federal guidelines and regulations;
- Participate in the FRA Hazardous Material, Operating Practices, Track, and Signal Inspection Programs;
- Prepare reports for major derailments and highway-rail accidents with fatalities.
- Review all complaints; and,
- Investigate and assist all law enforcement agencies with any criminal acts upon railroad property and railroad crossings, and train local law enforcement on crossing safety, railroad property, and trespass laws.

MDOT also has four Safety Specialist positions. These are FRA certified in specific disciplines or areas of rail safety operations (track, operations, hazardous materials, and signals). The Safety Specialists report defects to the FRA and the subject railroads for corrective action and/or repair.

11.2.3 Hazardous Materials

Federal common carrier obligations mandate that railroads are required to transport hazardous materials. The U.S. Department of Transportation received the authority to regulate the transportation of hazardous materials through the Hazardous Materials Act. Federal hazardous material regulations apply to all interstate, intrastate, and foreign carriers by rail, air, motor vehicle and vessel.

At the state level, MDOT oversees the registration and regulation of transporters of hazardous waste. MDOT's Office of Enforcement oversees compliance.

In the 10-year period, 2000 to 2009, only three hazardous material incidents in Mississippi were reported to the FRA.

11.2.4 Positive Train Control

Positive train control (PTC) refers to technologies designed to automatically stop or slow a train before certain accidents occur. PTC is designed to prevent collisions between trains and derailments caused by excessive speed, incursions by trains on tracks under repair and by trains moving over switches left in the wrong position. PTC systems are designed to determine the location and speed of trains, warn train operators of potential problems, and take action if operators do not respond to a warning.

The Rail Safety Improvement Act of 2008 required railroads to place PTC systems in service by December 31, 2015 on Class I railroad routes with over 5 million gross ton miles per mile with commuter or intercity passenger operations or any amount of toxic/poison-by-inhalation hazardous materials. Positive train control requirements currently exclude Class II or Class III (small) railroads that have no passenger service.

The cost of implementing PTC control on rail passenger routes may have implications on future rail passenger service plans.

11.2.5 Freight/Passenger Train Crash Response Plan

In 2007, MDOT developed the Freight/Passenger Train Crash Response Plan, which details the responsibilities of the Mississippi Department of Public Safety (MDPS), the Mississippi Highway Safety Patrol (MHSP), the affected railroad, and MDOT in the case of a train crash. In the event of a freight or passenger train crash:

- The affected railroad is to notify the MHSP's Dispatch Center in Jackson, the FRA and potentially the National Transportation Safety Board's National Response Center.
- MDPS and the MHSP are to provide emergency notification and warning; maintain liaison and coordination functions with the State Emergency Operations Center (SEOC); and provide direction and control of traffic as needed.

- The MDOT Emergency Services Manager is to coordinate functions with the SEOC and the MDPS; notify appropriate state and district personnel; and monitor the situation.
- The MDOT District Emergency Coordinator is to coordinate the response; assign personnel to assist with motor vehicle traffic around the affected area; restore the roadway system in accordance with MDOT established priorities; and notify and update the MDOT Emergency Services Manager.
- The MDOT District Representative is to notify the MDOT District Emergency Coordinator and keep that office up-to-date; and to serve as on-scene liaison between the crash site and the District office.
- MDOT Rail Inspectors are to:
 - Assess the crash situation in conjunction with local first responders;
 - Determine the number of injuries and fatalities, whether there has been a hazardous materials release, and if evacuation is necessary;
 - Determine the number of derailed cars and their contents as well as if any main transportation arteries are blocked;
 - Assist, as needed, the injured in an evacuation and in traffic control; and
 - Offer rail safety knowledge to first responders.

11.3 Rail Security

The focus of rail security has changed significantly over the past decade. In response to potential terrorist threats to the transportation system, new federal agencies have been established to oversee and provide assistance to ensure the security of transportation modes. The following addresses specific rail security issues and Mississippi's involvement in rail security procedures.

11.3.1 Federal and State Roles in Rail Security

The primary agencies responsible for security related to transportation modes in Mississippi are the U.S. Department of Homeland Security and the State Departments of Public Safety and Transportation.

The Department of Homeland Security addresses rail system security through the following means:

- Training and deploying manpower and assets for high risk areas;
- Developing and testing new security technologies;
- Performing security assessments of systems across the country; and,
- Providing funding to state and local partners.

The Association of American Railroads, working with Homeland Security and other federal agencies, has organized the Rail Security Task Force. This task force developed a comprehensive risk analysis and security plan for the rail system that includes:

- A database of critical railroad assets;
- Assessments of railroad vulnerabilities;
- Analysis of the terrorism threat; and,
- Calculation of risks and identification of countermeasures.

The private railroad sector maintains communications with the U.S. Department of Defense, the U.S. Department of Homeland Security, the U.S. Department of Transportation, the Federal Bureau of Investigation, and state and local law enforcement agencies on all aspects of rail security.

The Mississippi Department of Public Safety's Office of Homeland Security acts as the state's lead agency for emergency response. This agency, with the assistance of MDOT, addresses security and emergency response issues related to rail within the state.

Local emergency plans must address coordination of action for emergency release of hazardous substances at sites and facilities such as shipping terminals and rail yards.

MDOT coordinates with the U.S. Department of Homeland Security in conducting special joint enforcement details involving railroad police departments and security, along with county and city enforcement offices.

11.3.2 Strategic Rail Corridor Network

The U.S. Military Surface Deployment and Distribution Command's Transportation Engineering Agency has identified the national Strategic Rail Corridor Network (STRACNET). STRACNET is comprised of a 32,000-mile interconnected network of rail corridors and associated connector lines most important to national defense. Mississippi's STRACNET system is shown in

Figure 11-1.

Camp Shelby and NCBC, Gulfport, are identified by the U.S. Military Surface Deployment and Distribution Command as a defense installation requiring rail service. Camp Shelby is described as being served by low density branch line connectors, i.e. the KCS Hattiesburg-Gulfport line and the CN Hattiesburg-Mobile line. The former will be upgraded to handle marine related traffic to and from Gulfport.

MDOT works with the Military Surface Deployment and Distribution Command to ensure the strategic nature of these corridors and connecting lines are considered in their planning process.

The figure below was obtained from a March 2008 report entitled *Strategic Rail Corridor Network (STRACNET) and Defense Connector Lines*, produced by the Military Surface Deployment and Distribution Command. All line designations may not be current due to the date of map preparation.

Figure 11-1: Mississippi Area STRACNET Map



Source: U.S. Military Surface Deployment and Distribution Command

12. INVESTMENT PROGRAM

12.1 Introduction

The federal Passenger Rail Investment and Improvement Act of 2008 requires State Rail Plans to include a Short Range Rail Investment Program, which comprises rail capital projects to be considered for the next five years, and a Long Range Investment Program, which comprises rail capital projects to be considered for years 6 through 20 that are expected to be undertaken or supported in whole by the state.

The following describes Mississippi's rationale for the Short Range and Long Range Investment Programs as well as a short description of the process and quantitative tool utilized to determine project benefits and prioritize projects for inclusion in the programs.

12.2 Short Range Rail Investment Program

Rail projects included in the initial Mississippi Short Range Investment Program are listed in **Appendix C**.

The projects listed have been approved for assistance based on an evaluation of their respective benefits and the availability of funding. Current short term projects will be funded from the Mississippi Multimodal Improvement Program, the State's Grade Crossing Improvement Program, or other federal or local funding sources.

The Short Range Rail Investment Program currently includes port-owned short line rehabilitation projects and rail-highway grade crossing projects. Short line rehabilitation projects are projects that involve the upgrading of short line railroad lines, facilities, or connections to new industries. Work typically includes upgrading or replacing rail, replacing ties, and repairing or upgrading bridges, as well as construction of yards or sidings. The purposes of these projects can include ensuring continued service on the rail line, upgrading rail lines to accommodate 286,000-lb. gross weight car loadings, upgrading tracks to a higher FRA track classification, improving yard capacity, improving connections to Class I railroads, or providing access to new customers.

Crossing improvement projects cited in **Appendix C** were noted in Section 11, Rail Safety and Security.

12.3 Long Range Rail Investment Program

Mississippi has identified its long-range investment program to be those projects necessary to implement intercity rail passenger improvement or expansion projects, potential project improvements on the state's Class I railroad system, and other potential short line railroad project improvements identified during the analysis of the rail system undertaken during the State Rail Plan development process.

MDOT will review and revise the long range investment plan as necessary based on future project identification, evaluation, timing, and allocation of state resources. As potential state and federal funding sources are identified, and the project evaluation methodology be applied to newly identified projects, projects will be added or revised as appropriate.

The projects Mississippi has identified for its initial Long Range Rail Investment Program are included in **Appendix D**. Projects appearing in this appendix were noted in Section 4, Freight Rail System Evaluation; Section 5, Passenger Rail System Evaluation; Section 7, Freight Rail Intermodal Assessment; and Section 8, Potential Passenger Corridors. Regarding port-rail projects cited in Table 7-3, only those project relating to railroads serving the ports are included in the appendix.

12.4 Project Evaluation Process

Mississippi's Multimodal Transportation Improvement Program's (MTIP) evaluation process is somewhat unique in that because existing eligibility criteria limit investment to publicly-owned transportation assets, the need to separate public and private project benefits is significantly diminished, as all benefits could be considered to be public benefits. Nevertheless, MDOT and the Multimodal Capital Improvement Fund (MCIF) Ports Committee recognize the importance of evaluating projects on the basis of consistent and functional criteria. The committee names projects to be funded through the MTIP.

The MCIF Ports Committee is comprised of representatives from the Mississippi Development Authority, MDOT, the Mississippi Water Resources Association, and seven port directors of the public ports of Mississippi. The committee has established the following criteria for the MTIP's project prioritization:

- *Operational Impacts* – This evaluation element considers operational efficiency, safety, and security as well as the associated enhancements in rail service to shippers and the public.
- *Economic Impacts* – This element evaluates the associated increase in revenue and/or cost savings resulting from the project. It also considers primary and secondary economic benefits to the surrounding community as evidenced by new or retained jobs. Analysis also includes whether the proposed project will meet the needs of future development. Applicants are required to provide a thorough cost-benefit analysis that accounts for the above economic impacts.
- *Railroad Support Activity* – This entails the extent by which the rail project will improve the overall transportation system within the port facility. This includes access and service to the water and truck modes and to customers and facilities within the port area.
- *Funding* – This entails an analysis to determine the applicant's need for financial assistance, the applicant's ability to finance improvements with its own resources, and

improvements to the operator's financial viability as a result of the project. The applicant must also provide matching funds from either public or private sources.

Grade crossing projects will continue to be evaluated and selected on the basis of FRA's hazard index and accident exposure rating formulas as applied by MDOT.

MDOT recognizes that the availability of federal intercity rail passenger funding and the potential for rail-eligible federal financing through future transportation assistance programs will require a project evaluation process for non-public rail applicants. MDOT is currently considering evaluation methodologies that will meet existing federal guidelines and the transportation system priorities established in its ongoing Statewide Transportation Plan process.

13. RAIL FUNDING AND FINANCE

13.1 Introduction

Mississippi has a long history of providing financial assistance to railroads operating in the state. In 1972 the Mississippi Legislature established the Railroad Revitalization Fund. This revolving fund was designated to hold and disburse federal, state or other funding made available for railroad research, planning, and administration costs incurred by MDOT directly attributable to railroad revitalization projects, assistance to railroads for the rehabilitation or improvement of rail lines, and the construction, improvement or rehabilitation of railroad facilities.

This fund complied with the provisions established by the Federal Railroad Administration's (FRA) Local Rail Freight Assistance Program. The State's contributions to this fund were derived from collections from the locomotive fuel tax.

Over time financial assistance to the State's railroads has expanded not only with regard to the level of financial assistance provided, but also by the number of governmental entities within the State that contribute funding for the rail planning and rehabilitation activities conducted with the State.

This section provides a description of existing state, local, regional, and federal programs utilized by or available to Mississippi for rail system improvements.

13.2 Existing Rail Assistance Programs

Mississippi, like many other states established a rail assistance program to address the rail industry's economic problems and service abandonments that began in the 1970s. State assistance programs have generally grown and become more diversified over time, evolving from branch line and short line preservation or improvement programs to address capacity constraints, enhance intermodal movements, and initiate and/or expand intercity rail passenger service. The following are existing rail financial assistance sources available to Mississippi at various governmental levels.

13.2.1 State Rail Assistance Programs

13.2.1.1 MDOT Railroad Revitalization Fund

This program has historically provided no-interest loans for up to 50 percent of the costs for rail and rail/highway crossing rehabilitation and upgrade projects. Funding available from all sources averaged \$4 million from federal funding allocations and state rail-diesel fuel tax revenue.

In 2009, the Mississippi Legislature passed House Bill 1712, which authorized the issuance of up to \$16 million of state general obligation bonds to fund rail system and multi-modal projects in the state. Of this amount a total of \$12.5 million is to be deposited in the Railroad Revitalization

Fund to provide assistance to railroads for the rehabilitation or improvement of existing freight and passenger rail lines, construction, improvement or rehabilitation of railroad facilities, and for highway-railroad crossing safety. One million dollars of this amount is allocated to the Mississippi Highway-Railroad Grade Crossing Safety Account.

13.2.1.2 Multimodal Transportation Improvement Program

This fund, established in 1972, is to be expended by the Department of Transportation for the improvement of publicly owned (State, county, or municipality) ports on the coastal and inland waterways. Mississippi Code 65-1-707 provides guidance for the allocation of funds. During each state fiscal year, MDOT is required to distribute available funds among the various modes as follows:

- Ports – 38 percent
- Airports – 34 percent
- Transit Systems – 16 percent
- Rail – 12 percent

Eligible rail projects must be directly related to capital improvements or the rebuilding or rehabilitation of basic infrastructure and not for routine maintenance, administrative or operational expenses, directly related to the operation of the railroad, and for a purpose outside the normal operating budget of the railroad.

Project applications for Multimodal Improvement Program funding are reviewed by MDOT to ensure eligibility and selected by the Railroad Multi-Modal Fund Committee comprising a director of each port railroad, the Executive Director of MDA, and the Executive Director of MDOT or their designees.

For State Fiscal Year 2010 \$1.2 million of Multi-Modal rail funds were allocated to four rail projects and for State Fiscal Year 2011, \$1.2 million was allocated to five rail projects. These projects are identified in the Short-Term Rail Improvement Program.

13.2.1.3 MDOT Capital Assistance Stimulus for Rail Projects Fund

This fund was created by 2009 House Bill 1712 as a separate and special fund for the construction, rehabilitation, maintenance and improvement of the State's passenger rail infrastructure. The fund is intended to take advantage of and match federal funding assistance available for conventional intercity passenger, high speed rail corridor, or other high speed rail services. Up to \$3.5 million of the bonds authorized are allocated to this fund.

13.2.1.4 MDA Freight Rail Service Revolving Loan Program

Mississippi Development Authority (MDA) is Mississippi's lead economic and community development agency. MDA administers the Mississippi Freight Rail Service Projects Revolving Load Program (RAIL) that provides loans and grants to municipalities and counties to finance freight rail service projects in the State. Projects may involve the acquisition, construction, installation, operation, modification, renovation or rehabilitation of any freight rail service facility. Loans are limited to \$1 million per project per calendar year for a maximum term of 15 years or the life of the project, whichever is less. The loan interest rate is 1 percent below the Federal Reserve Discount Rate at the time of the loan approval. Governing authorities can in turn use the program funds received to make loans to railroad operators for qualified projects (Section 57-44-5).

In addition to RAIL, MDA has a variety of other loan and grant programs available to fund rail projects, primarily rail spurs. Examples are the Capital Improvement Revolving Loan Program (CAP), the Development Infrastructure Grant Program (DIP), and the Rural Impact Fund Grant Program (RIF). Many of the programs are restricted to publically owned infrastructure.

13.2.2 Local Government Rail Assistance

Mississippi has established a number of local and state regional authorities that contribute financial resources to conduct rail planning or other functions necessary to improve rail access and operational efficiency. The following are recent typical examples of these activities.

The *Rail Authority of East Mississippi (RAEM)* is comprised of five counties working to re-establish rail service between Waynesboro and Lucedale in Southern Mississippi. The authority has allocated \$375,000 to develop an implementation plan and market study to assist in pursuing federal funding for the estimated \$225 million project. The *Pascagoula Port Authority*, *Jackson County Port Authority*, and other member counties all contributed toward funding the study.

The *Port Authority at Gulfport* was recently successful in acquiring a \$20 million federal grant to upgrade a KCS rail line to accommodate double-stack intermodal trains.

In addition to local authorities, Mississippi Planning and Development Districts provide regional community and economic development services to ten regions across the state. These agencies secure and administer grants and other funding for its member governments and provide other technical and socioeconomic services.

13.2.3 Rail Assistance from Regional Commissions and Authorities

A number of regional authorities with funding available to study or contribute to transportation or transportation-related economic development initiatives have portions of Mississippi located within their geographic boundaries. The authorities described below have a history of providing financial assistance to study or fund rail improvements in their region.

13.2.3.1 Appalachian Regional Commission

The Appalachian Regional Commission (ARC) provides funding for several hundred projects throughout the Appalachian Region in support of its goals, which includes improving the capacity, efficiency, and responsiveness of the region's intermodal corridors. ARC, which encompasses 24 counties in northeast Mississippi, recently provided \$100,000 to conduct a Phase 2 study of the proposed Columbus & Greenville Rail Revitalization project.

13.2.3.2 Delta Regional Authority

The Delta Regional Authority (DRA), which encompasses eight states along the Mississippi River valley, was established under federal law to invest in economically distressed areas. Half of the funding available to DRA is earmarked for transportation and basic infrastructure improvements. The DRA may also provide matching funds for other state and federal programs. The DRA region encompasses 47 counties in West Mississippi.

13.2.4 Federal Rail Programs

Historically, there have been few dedicated federal programs for rail capital assistance available to states. In 2008, however, the Passenger Rail Improvement and Investment Act (PRIIA) and related appropriation bills provided funds directly to states for rail intercity passenger investments. In early 2009, the American Recovery and Reinvestment Act also provided flexible transportation funding to states for capital projects as well as funding for passenger rail development.

The following describes these and other programs specifically available for rail assistance as well as programs that may be eligible for selected rail-related applications.

13.2.4.1 Federal Rail Intercity Passenger and High Speed Rail Programs

Over the past two years, the federal government has placed a high priority on the improvement of intercity rail passenger service both as a source of economic stimulus and as an essential future mode of passenger transportation. The following are the legislative and budget initiatives that have been approved to assist states in intercity rail passenger planning and development.

Passenger Rail Improvement and Investment Act (PRIIA) of 2008 - This legislation authorized over \$13 billion between 2009 and 2013 for Amtrak and promotes the development of new and improved intercity rail passenger services. The Act also establishes an intercity passenger rail capital grant program for states. States are required to identify passenger rail corridor improvement projects in their State Rail Plan.

PRIIA established three new competitive grant programs for funding high-speed intercity passenger rail improvements. Each of the three programs provides 80 percent federal funding with a required 20 percent non-federal match.

Intercity Passenger Rail Service Corridor Capital Assistance Program - This program is intended to create the framework for a new intercity passenger rail service corridor capital assistance program. The program authorizes USDOT to use appropriated funds to make grants to assist in financing the costs of facilities, infrastructure, and equipment necessary to provide or improve intercity passenger rail transportation. States or groups of states, interstate compacts, and public intercity passenger rail agencies established by states are eligible for these grants. In addition, to be eligible for funding under this program, projects must be included in an approved State Rail Plan. Existing or proposed intercity passenger services in Mississippi implemented by either MDOT or the Southern HSR Commission are eligible under this program.

High Speed Rail Corridor Development Program - PRIIA also authorized \$1.5 billion annually to establish and implement a high-speed rail corridor development program. Funding is currently restricted to projects intended to develop the ten federally-designated high-speed corridors for intercity passenger rail services that may reasonably be expected to reach speeds of at least 110 miles per hour. The portions of the federally designated high speed Gulf Coast Corridor within Mississippi are eligible under this program.

Congestion Grants - This program authorizes \$325 million annually for grants to states, or to Amtrak in cooperation with states, for financing the capital costs of facilities, infrastructure, and equipment for high-priority rail corridor projects necessary to reduce congestion or facilitate intercity passenger rail ridership growth.

13.2.4.2 U.S. DOT Budget Appropriations

Federal funding authorized under PRIIA or other authorization programs must be appropriated under annual budget or other legislative bills. U.S. DOT's most recent budget appropriation (FFY 2010) provided \$2.5 billion in funding for the high-speed rail state grant program authorized under PRIIA. Funds are provided to states, on a competitive basis, up to 50 percent of the capital cost of improving intercity rail passenger service.

Previous DOT appropriation acts also provided funding that could be utilized for intercity rail passenger improvements under similar terms. The FFY 2009 DOT Appropriations Act provided \$90 million to states. The FFY 2008 DOT Appropriations Act provided \$30 million to states. Up to ten percent of the funding available under these appropriations is available for rail corridor planning grants.

13.2.4.3 American Recovery and Reinvestment Act (ARRA)

As a result of the economic recession of 2008, the federal government approved the American Recovery and Reinvestment Act in February, 2009 to stimulate the economy partly through the funding of infrastructure projects that could be initiated in the short term. Programs that could be utilized for rail-related projects under this Act are described below.

Flexible Highway Program - This program provided states a total of \$27.5 billion of flexible highway funding for surface transportation improvements, including rail improvements. Eligibility criteria included projects being “shovel ready” for early implementation.

Intercity Passenger Rail/High Speed Rail Program - This program provided \$8 billion of High-Speed Intercity Passenger Rail funding to “jump start” intercity passenger rail improvements authorized under PRIIA. The federal share of costs was 100 percent and proposed projects were not required to be included in a State Rail Plan.

Investment Generating Economic Recovery (TIGER) Discretionary Grants Program - This program allowed local and state governments to apply for \$1.5 billion of discretionary funding. Grants were eligible for capital investment in rail, highway, bridge, public transportation, and port projects and awarded by USDOT on a competitive basis. The Mississippi State Port Authority at Gulfport received a \$20 million TIGER grant to upgrade the KCS line to accommodate 49 mph double-stack intermodal service to the Port.

13.2.4.4 Rail-Related SAFETEA-LU Funding Programs

The Safe, Accountable, Efficient Transportation Equity Act – a Legacy for Users (SAFETEA-LU), the current authorization bill for the nation’s surface transportation program, was scheduled to expire on October 1, 2009. The Act has been extended until a new transportation authorization bill is approved by Congress and passed into law. The SAFETEA-LU bill contains a number of program provisions with specific eligibility for rail. These include:

Section 130 Highway-Rail Grade Crossing Program - This program provides federal support in an effort to reduce the incidence of accidents, injuries and fatalities at public rail-highway crossings. States may utilize funds to improve railroad crossings, including the installation or upgrading of warning devices, the elimination of at-grade crossings through grade separation, or the consolidation or closing of crossings. The federal share for these funds is 90 percent. MDOT receives an average of \$4.5 million in Section 130 funding annually.

Rail Line Relocation and Improvement Capital Grant Program - Section 9002 of SAFETEA-LU authorizes \$350 million per year for the purpose of providing financial assistance for local rail line and improvement projects. Any construction project is eligible that improves the route or structure of a rail line and:

1. Involves a lateral or vertical relocation of any portion of the rail line, or
2. Is carried out for the purpose of mitigating the adverse affects of rail traffic on safety, motor vehicle traffic flow, community quality of life, or economic development

The federal share for these funds is 90 percent, not to exceed \$20 million.

Rail Rehabilitation and Improvement Financing (RRIF) - Section 9003 of SAFETEA-LU provides loans and credit assistance to both public and private sponsors of rail and intermodal projects. Eligible projects include acquisition, development, improvement, or rehabilitation of intermodal or rail equipment and facilities. Direct loans can fund up to 100 percent of a capital project with repayment terms of up to 25 years and interest rates equal to the cost of borrowing to the government. A total of \$35 billion was authorized for this program, of which \$7 billion was directed to short line and regional railroads. Eligible borrowers include railroads, state and local governments, government sponsored authorities, and corporations, and joint ventures that include at least one railroad.

13.2.4.5 Other SAFETEA-LU Programs with Selected Rail Applications

In addition to the above programs, a number of additional programs, although primarily intended for highway use, are eligible for rail projects at the discretion of states and with the approval of the administering federal agency. These programs include:

National Highway System (NHS) Program - This program can be utilized to improve designated highway intermodal connectors between the NHS system and intermodal facilities, such as truck-rail transfer facilities. The federal share of NHS funding is 80 percent.

Congestion Mitigation and Air Quality (CMAQ) Improvement Program - This program funds transportation projects and programs that improve air quality by reducing transportation-related emissions in non-attainment and maintenance areas for ozone, carbon monoxide, and particulate matter. Examples of CMAQ-funded rail projects include the construction of intermodal facilities, rail track rehabilitation, diesel engine retrofits and idle-reduction projects in rail yards, and new rail sidings. State Departments of Transportation and Metropolitan Planning Organizations select and approve projects for funding. The federal matching share for these funds is 80 percent.

Surface Transportation Program (STP) - The Surface Transportation Program is a general grant program available for improvements on any Federal-Aid highway, bridge, or transit capital project. Eligible rail improvements include lengthening or increasing vertical clearance of bridges, crossing eliminations, and improving intermodal connectors. State Departments of Transportation and Metropolitan Planning Organizations select and approve projects for funding under this program. The federal matching share for these funds is 80 percent.

Transportation Infrastructure Finance and Innovation Act (TIFIA) - This program provides credit assistance to large scale projects (over \$50 million or 1/3 of a state's annual federal-aid funds) of regional or national significance that might otherwise be delayed or not constructed because of risk, complexity, or cost. A wide variety of intermodal and rail infrastructure projects are eligible and can include equipment, facilities, track, bridges, yards, buildings, and shops. The interest rate for TIFIA loans is the US Treasury rate and the debt must be repaid within 35 years.

High Priority Projects - This program provided designated funding over a five-year period for 5,091 projects identified in SAFETEA-LU. Though primarily highway-related, some projects were rail-related. Funding under this program was provided to upgrade safety devices at the Front St, Ellisville crossing.

Transportation Enhancement Program - These funds are available to strengthen the cultural, aesthetic, and environmental aspects of the Nation's intermodal transportation system. Eligible projects can include the rehabilitation of historic transportation buildings or facilities, and the preservation of abandoned rail corridors. Projects are usually chosen at the local government level. The federal share of project costs is 80 percent.

New Starts Program - The Federal Transit Administration provides funding for major commuter rail projects under this program. Projects eligible for New Starts funding include any fixed guideway system that utilizes and occupies a separate right-of-way, or rail line, for the exclusive use of mass transportation and other high-occupancy vehicles, or uses a fixed catenary system and a right-of-way usable by other forms of transportation. This includes rapid rail, light rail and commuter rail systems.

Private Activity Bonds - SAFETEA-LU established a new financial assistance program that provides up to \$15 billion in private activity bonds for transportation infrastructure projects. States and local governments are allowed to issue tax-exempt bonds to finance projects sponsored by the private sector. Eligible projects include privately owned-or-operated highway and rail-truck transfer facilities.

State Infrastructure Banks (SIB) - This program allows all states to set aside 10 percent of highway formula grants to establish revolving funds that can be used to provide loans and other credit tools to public or private sponsors for eligible transportation projects. Multi-state SIBs may also be utilized to fund projects that cross jurisdictional boundaries. States must provide 20 percent of the capitalization amount and debt must be repaid within 30 years.

13.2.4.6 Other Federal Programs Available for Rail-Related Funding

In addition to transportation programs available under the Transportation Authorization bill, other programs are administered by federal agencies for which rail-related capital projects are eligible. These programs include:

U.S. Dept. of Commerce Economic Development Administration (EDA) - The U.S. Department of Commerce provides EDA grants for projects in economically distressed industrial sites that promote job creation or retention. Eligible projects must be located within EDA-designated redevelopment areas or economic development centers. Eligible rail projects include railroad spurs and sidings. Grant assistance is available for up to 50 percent of the project, although EDA could provide up to 80 percent for projects in severely depressed areas.

U.S. Dept. of Agriculture Programs - The U.S. Department of Agriculture Community Facility Program and Rural Development Program provide grant or loan funding mechanisms to fund construction, enlargement, extension or improvement of community facilities providing essential services in rural areas and towns. Grant assistance is available for up to 75 percent of the project cost. Eligible rail-related community facilities include transportation infrastructure for industrial parks and municipal docks.

U.S. Department of Homeland Security - The Department of Homeland Security (DHS) provides grants to freight railroad carriers under the Freight Rail Security Grant Program. DHS funds security initiatives for freight rail carriers that transport security-sensitive materials through designated high-population areas. Carriers may request funds to support security awareness and emergency response training. The maximum federal share of any project is 75 percent for public sector grantees and 50 percent for private sector grantees.

13.3 Rail-Related Legislative Proposals

Legislative proposals with potential to affect the rail industry are offered by federal and state legislative bodies, as well as the rail industry itself. The following are current legislative proposals that could affect the Mississippi rail program over the near term.

13.3.1 Prospective Changes to Federal Rail Assistance Programs

As noted above, SAFETEA-LU, the current federal transportation funding authorization legislation, has been extended into 2011. However, significant discussion over the need to significantly change the objectives and means of funding future transportation programs has been undertaken in recent years.

Within SAFETEA-LU legislation, Congress established a National Policy and Revenue Commission to review transportation issues and to issue recommendations. The resulting report, *Transportation for Tomorrow*, calls for significant changes in the way national transportation needs are addressed in the future. Specifically, the Commission called for new program areas to better meet the nation's economic reliance on transportation. Suggested new program areas that could be associated with the rail mode include: Asset Management; Freight Transportation; Congestion Relief-Metropolitan Mobility; Safe Mobility; Access to Small Cities and Rural Areas; and Intercity Passenger Rail.

The report recommends that federal funding of these recommended programs be based on individual plans developed by each state and metropolitan areas, as well as those developed by multi-state coalitions.

13.3.2 Federal Surface Transportation Program Proposals

Although it is impossible to speculate as to the contents of a new federal Surface Transportation funding authorization bill, Congressional proposals submitted to date provide encouragement with regard to increased emphasis on freight and rail funding eligibility.

Legislative proposals include initiatives such as the establishment of a federal Office of Freight Transportation Planning and Development, the development of a National Freight Transportation Strategic Plan, and a competitive grant program to provide funding for capital investments for freight projects including development of multimodal terminal facilities, freight rail improvement and capacity expansion projects, and projects that improve access to a port or terminal facility.

13.3.3 Other National Rail Transportation Legislative Proposals

In addition to Congressional proposals to establish a new Surface Transportation Program, a number of additional rail-related legislative proposals have been submitted by the rail industry and others for the purpose of providing financial incentives to improve the rail network. Examples of these legislative proposals follow.

13.3.3.1 Railroad Track Maintenance Credit Program

This program was originally authorized within the Internal Revenue Code in 2005 to provide tax credits to qualified entities for an amount equal to 50 percent of qualified railroad maintenance expenditures on railroad tracks owned or leased by Class II or Class III railroads. The maximum credit amount allowed was \$3,500 per mile of track.

Although this program expired at the end of 2007, the Emergency Economic Stabilization Act of 2008 extended the tax credits through December 31, 2009 and also made qualified railroad track maintenance expenditures made anytime during 2008 eligible for tax credits. This program has been further extended through 2012 as a result of the Congress' extension of income tax rates passed in late 2010. A number of short line railroads operating in Mississippi have taken advantage of this program.

Legislation has been introduced to extend the tax credit program for an additional three year period and to increase the credit limitation from \$3,500 to \$4,500 per mile.

13.3.3.2 Freight Rail Infrastructure Capacity Expansion Legislative Proposal

This legislative proposal, endorsed by the Association of American Railroads (AAR), would provide a 25 percent tax incentive for projects that expand rail capacity. Eligible projects would include new track, intermodal facilities, and other projects that expand freight capacity. Railroads, as well as any businesses that make capacity-enhancing rail investments, would be eligible for the incentives.

APPENDIX A: KEY CAPACITY AND OPERATIONAL IMPROVEMENTS ON THE NEW ORLEANS-GULFPORT-MOBILE CORRIDOR

This appendix provides a summary of recommended improvements to the New Orleans-Gulfport-Mobile rail line. For additional details please see the *Gulf Coast High-Speed Rail Corridor, New Orleans to Mobile Corridor Development Plan, Volume I, Summary Report*, October 2006. These recommended improvements would be phased over time based on funds available and the number of frequencies to be operated.

Rail/Highway Grade Crossings – As outlined in the report noted above, there are 183 public and private grade crossings in the corridor. MDOT, along with all the member states, has a grade crossing program that is implementing crossing improvements and actively seeking additional funding to continue to improve or eliminate highway-rail grade crossings along its rail lines, including the New Orleans-Gulfport-Mobile corridor. Grade crossing improvements range from complete separation, to consolidation of multiple crossings into a few upgraded crossings, to sealed corridors (crossings with four-quadrant gates with lane medians that prevent vehicles from running around the gates). In most cases all other crossings will be upgraded with Constant Warning Time Circuits that automatically adjust warning time to individual train speed. Finally, new sidings can be constructed or grade crossings that intersect sidings can be relocated to avoid highways being blocked when train meets occur.

Existing Siding Upgrades (all current sidings) – The existing sidings on the route, while they have controlled switches, have 25 mph turnouts and the sidings themselves are not controlled for track occupancy. As a result trains entering sidings travel at a very slow speed. This negatively impacts line capacity. Upgrading siding turnouts to allow 45 mph (#20 turnouts) and upgrading siding track signal systems would allow faster clearing of the main line for trains entering the siding and less delay for trains meeting and passing.

New Sidings, Double Track and Siding Extensions – Siding length and distance between sidings also impacts line capacity. Short sidings (less than 21,000 feet) cannot accommodate multi-train meets or handle today's longer freight trains. Re-spacing sidings provides more uniform siding-to-siding running time. One challenge in achieving optimum siding length and spacing is the number of bayous, rivers and wetlands crossed by the route. In Mississippi the plan recommends:

- Lengthening Orange Grove, Gautier, Nicholson Avenue and Claiborne sidings.
- A new siding would be constructed between the East and Middle Pascagoula Rivers.
- A new Ocean Springs siding would be constructed two miles east of the current short Ocean Springs siding - the siding would improve siding spacing and minimize the impact on local highway traffic of trains waiting for meets.
- Beauvoir and Harbin sidings would be linked to form a 17-mile stretch of double track through Gulfport - this segment of the corridor has about one-third of all the grade crossings on the line.

The recommended 17-mile stretch of double track through Gulfport would facilitate running meets between trains (freight and passenger) reducing grade crossing delays. Also as the mid-point of the route this segment of double track facilitates the clock time scheduling of passenger trains (trains scheduled out of each terminal at a set hourly time) since they would both meet at this point.

Outside of Mississippi the plan recommends additional corridor improvements. In Alabama capacity improvements include extending double track from Choctaw Yard to Brookley Siding and constructing a new Choctaw siding. The St. Elmo siding would be replaced with two new sidings at Fowl River and Little Franklin. Long term, double track would be extended from Brookley to Fowl River. In Louisiana Lake Catherine siding would be lengthened, and the Michoud double track would be extended one-mile eastward.

Upgrade Movable Bridges – Three of seven movable bridges – Pascagoula River, Biloxi Bay and Bay St. Louis – are located in Mississippi. While the bridges are structurally sound, as a result of their design (use of stringers on 9-foot centers instead of 6-foot 6-inch centers) there are movements of the rails and ties under trains. This movement causes signal system reliability issues on former Louisville & Nashville Railroad bridges when trains are operated over the bridges at speeds over 30 mph (25 mph for freight). This situation continues despite major upgrades to the bridges undertaken by CSXT to facilitate traffic growth. Another issue is that some bridges are founded on timber or steel pile piers, which results in additional bridge flexibility. Recommended are further structural upgrades to the movable bridges and the installation of an improved miter rail design.

Gentilly and Sibert Freight Yards – While lying outside Mississippi, capacity and operational issues at CSXT's Gentilly freight yard located in New Orleans, LA and Sibert freight yard located in Mobile, AL could significantly impact the reliability of corridor rail passenger operations. Obsolete track layouts and a lack of capacity cause the operations of both yards to spill over to the main line. Main line sidings are used to stage trains waiting to enter the yard. Both actions significantly degrade line capacity. The impact of additional outlying staging capacity or additional departure/receiving tracks should be studied.

New Orleans Terminal Trackage – Also lying outside Mississippi but impacting the operations of three potential Mississippi routes (New Orleans-Gulfport-Mobile, New Orleans-Meridian-Birmingham-Atlanta and New Orleans-Jackson-Memphis) are the track condition, layout and capacity of rail lines in the City of New Orleans. Current train routes and operations are slow and circuitous, and main lines are often used to stage trains waiting for interchange. A critical leg into New Orleans Union Passenger Terminal (NOUPT) is single track. Recommended is a northward connection between the NS and CSXT at NE Tower. This would benefit Meridian Line trains. A third track is recommended between NE Tower and Marconi Drive (0.6 miles east of East City Junction). This would provide capacity to stage trains for interchange to western railroads.

Recommended is an upgrade of the turnouts at East City Junction and improvement of the alignment of the track between East City Junction and NOUPT to improve running times. A second track is recommended between East City Junction to Carrollton Junction (the connection from East City Junction to NOUPT). Reducing the curvature at Carrollton Avenue interlocking would increase speeds through the interlocking. A double track lead and upgraded interlocking are recommended at NOUPT. This would add flexibility to the existing terminal and benefit all three Mississippi passenger rail routes.

APPENDIX B: KEY CAPACITY IMPROVEMENTS ON THE NEW ORLEANS-MERIDIAN-BIRMINGHAM-ATLANTA CORRIDOR

This appendix provides a summary of recommended improvements between Meridian, MS and New Orleans, LA on the New Orleans – Meridian – Birmingham - Atlanta rail line. For additional details please see *Gulf Coast High-Speed Rail Corridor Development Plan, Phase I: Improvement Implementation Plan – Meridian to New Orleans, Volume I, Summary Report*, September 2002. These recommended improvements would be phased over time based on funds available and the number of frequencies to be operated.

Rail/Highway Grade Crossings – As with the Gulf Coast corridor discussed in Appendix A, MDOT is trying to improve crossings as practicable.

Centralized Traffic Control and Upgrades to all Existing Sidings – CTC, where siding signals and switches are controlled by a dispatcher, is critical to increasing line capacity for additional passenger trains and decreasing running time on the New Orleans-Meridian corridor. Currently the existing sidings have manual turnouts, and the sidings themselves are not controlled for track occupancy. As a result trains entering a siding must stop, and crews must line the switch so that the train can then proceed slowly into and through the siding. The switch must then be aligned for main line movement. This activity takes a significant amount of time and negatively impacts line capacity. Installing CTC (so the train does not have to stop), upgrading siding turnouts to allow 45 mph (#20 turnouts) and upgrading siding track signal systems would allow faster clearing of the main line for trains entering the siding and less delay for trains meeting and passing. Given that CTC is currently not installed on the Meridian Line, these improvements may provide an opportunity to look beyond the current PTC overlay system (PTC added to CTC) and move to a second generation PTC that brings safety, line side signal savings and enhanced line capacity. Much like grade crossing improvements, such improvements lend themselves to an early phased investment since they also benefit freight customers.

New Sidings, Double Track and Siding Extensions – One challenge in achieving optimum siding length and spacing is the number grades on the line. NS has indicated that sidings located on grades lead to operational problems. In Mississippi the plan noted above recommends the installation of CTC, #20 turnouts and siding signal control at Basic, Hawkes, Shows Field, Dragon and Richburg. Also in Mississippi in addition to signal and turnout improvements the plan recommended that the sidings at Derby, Barbett and Lumberton be lengthened. Three new sidings in Mississippi are recommended: Carriere, Moselle and Heidelberg. Because of the distance between Derby and X Tower (50 miles) the plan recommended early action on the construction of the Carriere siding (funding design underway) and upgrading of Derby siding.

Two other sidings –Woods and Pearl River – recommended for improvements are located in Louisiana.

Meridian Interlocking and Track Configuration – The Meridian Terminal track configuration, left over from five separate railroad companies that served Meridian at one time, had many operational and physical barriers to efficient flow through the terminal. As a part of the Meridian Speedway project (a joint effort of NS and KCS on the line from Meridian to Shreveport), the terminal has been redesigned. The design is presently being phased in. The interlocking plant that once governed the crossing between KCS and the NS at the east end of the yard is scheduled for removal. Other trackage and operational changes will eliminate the many conflicts between the two railroads as the new track configuration is installed. NS fuels many of its trains at Meridian. Also, there are crew changes, exchanges of freight, and interchanges of through trains between the two railroads there, so most NS trains at present stop in Meridian.

At the completion of track changes, KCS Artesia Subdivision trains will not have to stop in Meridian except for crew changes, and the two crossings of NS by KCS through trains will be eliminated. All pick-ups and set-outs for Meridian by main line trains will be handled at Marion, approximately four miles from Meridian on the Artesia Subdivision, eliminating the working of through trains in the KCS Meridian Yard. A local Meridian switch crew will shuttle cars between Marion and Meridian during lulls in main line traffic. Trains moving to and from the Speedway will have good access to the NS main tracks.

At this writing, no signaling will be provided on either railroad between the end of ABS signaling south of Meridian and the beginning of CTC east of Meridian on NS. KCS CTC will end just west of the present west yard limit. The KCS Artesia Subdivision east of Meridian is unsignaled and will remain so. All turnouts in the terminal will be hand-thrown. However, with the elimination of the double crossings between the two railroads, the effect of the hand-thrown turnouts on terminal throughput is expected to be minimal. Amtrak loading and unloading at the depot platform is provided for in the new design.

Upgrade Movable Bridges – Three movable bridges – Seabrook, Lake Pontchartrain and Pearl River – are located on the route. While these bridges are all located in Louisiana speed restrictions on the bridges negatively impact running time on the New Orleans-Meridian route. Recommended in the *Phase I: Improvement Implementation Plan* is the installation of an improved miter rail design on the bridges.

New Orleans Terminal Trackage – The need here is the same as stated in Appendix A for the New Orleans-Jackson-Memphis corridor.

APPENDIX C: SHORT RANGE INVESTMENT PROGRAM

Freight Projects			
Project Name	Project Description	Project Benefits	Cost (\$millions)
Bridge Reconstruction, Marion County	Re-construct bridge to allowed continued operation of rail line. Estimated project completion date is Summer, 2013.	Provides for higher speeds and carload weights allowing more efficient operations	Total \$0.150 (\$0.050 sponsor, \$.100 program)
Spur Construction, Hancock County	Construct a railroad spur loading/unloading track. Estimated project completion date is Summer, 2013.	Provides rail access to a large industrial customer.	Total \$0.834 (\$0.434 sponsor, \$0.400 program)
Car Repair, Track and Storage Facility, Mississippi Railway Cooperative	Complete construction of car repair track and storage facility. Estimated project completion date is Summer, 2013.	Improves safety and efficiency for repairs and provide track storage.	Total \$0.541 (\$0.241 sponsor, \$0.300 program)
New Grade Crossing, Coahoma County	New grade crossing. Estimated project completion date is Summer, 2013.	Enhances street connectivity and vehicle circulation.	Total \$0.978 (\$0.578 sponsor, \$0.400 program)
Bridge Upgrades, Coahoma County	Upgrade three bridges to 286K standards. Estimated project completion date is Summer, 2012.	Upgrades bridges allowing for increased carload weights and increased safety.	Total \$0.467 (\$0.153 sponsor, \$0.314 program)
Bridge Reconstruction, Marion County	Re-construct bridge damaged by fire. Estimated project completion date is Summer, 2012.	Restores rail service.	Total \$0.150 (\$0.065 sponsor, \$0.085 program)
Rail Section Repair, Mississippi Railway Coop.	Repair three mile section of flood damaged track. Estimated project completion date is Summer, 2012.	Restores efficient rail service.	Total \$0.744 (\$0.252 sponsor, \$0.492 program)
Railroad Embankment Improvements, Hancock County	Railroad embankment slope and channel improvements. Estimated project completion date is Summer, 2012.	Addresses drainage problems that threaten track integrity.	Total \$0.315 (\$0.153 sponsor, \$0.162 program)
Crosstie Replacement, Miss/Alabama RR	Replacement of 3125 crossties and existing grade crossing. Estimated project completion date is Summer, 2012.	Provides for higher train speeds.	Total \$0.500 (\$0.354 sponsor, \$0.146 program)
Total			\$2.4 program

Crossing Projects			
Project Name	Project Description	Project Benefits	Cost (\$millions)
Signals, Sidon, Leflore County, STP-0236-00(001)	CN crossing: Front St. Signals and gates in place, not completed pending closure in conjunction with project on CR 83. Completion date: TBD.	Upgrades crossing from passive warning to active warning system.	\$0.185 STP
Closure in conjunction with Front Street, Money, Leflore County, STP-0236-00(005)	CN crossing: County Road 83. Crossing will be closed with upgrade agreement of Front St. in Sidon. Problem with obtaining easement for new road construction. Completion date: TBD.	Eliminates crossing exposure at one crossing location.	\$0. 177 STP
Surface, Newton, Newton County, 01-0353-00-022	KCS crossing: Church Street. Surface project canceled though funded and PE work performed, and panels purchased. Pending relocation of materials to another MDOT project. Completion date: TBD.	Salvages panels for future use.	\$0.026 STP
Surface, Collins, Covington County, 02-0015-02-082	CN crossing: US Hwy 84. MDOT/CN put this project on hold until widening was completed. MDOT needs to assist with curbing, crossing gates need to be moved closer to road, and new rubber crossing recommended. CN needs to provide updated plans/estimates as widening is completed. Completion date: TBD.	Upgrades surface of crossing for safer vehicle operations.	\$0.028 STP
Gates/Surface, Grenada County, BRSTP-2901-00(024)	CN crossing: Hwy 51. Signals will not be put up due to no current rail service. MDOT has paid for materials and is underway with decision on where to utilize signals. Completion date: TBD.	Salvages materials for future use.	\$0.137 STP
Surface, Picayune, Pearl River County, 01-7154-00-004	NS crossing: Canal Street crossing. Still open in FMS; contact NS; one payment, no final, diaries, inspection, etc. Completion date: TBD.	Upgrades surface of crossing for safer vehicle operations.	\$0.042 STP

Crossing Projects			
Project Name	Project Description	Project Benefits	Cost (\$millions)
Closures, Gulfport, Harrison County, STP-0006-09(001-008)	CSXT crossings: 18 th Ave., 29 th Ave, 31 st Ave., 32 nd Ave., 40 th Ave., Woodward Ave., Ruth St., Hardy Ave. Ongoing Gulfport Corridor Project. Closures completed, pending completion of total corridor. Completion date: TBD.	Eliminates crossing exposure at 8 crossing locations.	\$0.261 STP
Signals and Gates, Gulfport Harrison County, STP-0006-09(009-014)	CSXT crossings: Walston (Perry) Ave., Texas Ave., Gulf Ave., 25 th Ave., 30 th Ave., 42 nd Ave. Ongoing Gulfport Corridor Project for Upgrades at Crossings. Completion date: BD.	Upgrades crossing protection at six crossings.	\$1.666 STP
Surface, Gulfport, Harrison County, STP-0008-01(122)	KCS crossing: US 49. Surface construction completed, but still underway as crossing settled and pending repair. Completion date: TBD.	Upgrades surface of crossing for safer vehicle operations.	\$0.373 STP
Surface, Gulfport, Harrison County, STP-0008-01(104)	CSXT crossing: US 49. CSX has \$20K estimate for surface from 2007, NTP issued, but no construction took place. Money is still available and need to follow-up with railroad. Completion date: TBD.	Upgrades surface of crossing for safer vehicle operations.	\$0.040 STP (Funded but not initiated)
Surface, Sandersville, Jones County, 01-0254-00-002	NS crossing: West Main St. \$14K was approved and NTP issued but not used on project. Need to follow-up with NS. Completion date: TBD.	Upgrades surface of crossing for safer vehicle operations.	\$0.014 STP (Funded but not initiated)
Signals and surface, Pascagoula, Jackson County, STP-0003-01(140)	MSE crossing: US 90. Pending assistance for traffic control from district. Completion date: TBD.	Upgrades warning devices and surface of crossing for safer vehicle operations.	\$0.305 STP (Funded but not initiated)
Surface, Petal, Forrest County, STP-0063-02(021)	NS crossing: Hwy 42. \$23,500 was approved and NTP issued but not used on project. Need to follow-up with NS. Completion date: TBD.	Upgrades surface of crossing for safer vehicle operations.	\$0.135 STP (Funded but not initiated)
Signals, Bay St. Louis, Hancock County, 02-0030-00(029)	CSXT crossing: Ballentine St. FRA authorization approved, but cost estimates were never received. Need to follow-up with CSX. Completion date: TBD.	Upgrades warning devices for safer vehicle operations.	\$0.091 STP (Funded but not initiated)

Crossing Projects			
Project Name	Project Description	Project Benefits	Cost (\$millions)
Signals, Waveland, Hancock County, 02-0023-00(029)	CSXT crossing: Clemond Rd. FRA authorization approved, but cost estimates were never received. Need to follow-up with CSX. Completion date: TBD.	Upgrades warning devices for safer vehicle operations.	\$0.135 STP (Funded but not initiated)
Signals, Tupelo, Lee County, 02-0430-00(015)	BNSF crossing: Park St. Project is on hold until MDOT can discuss possible closure and upgrade with city of Tupelo. Completion date: TBD.	Upgrades warning devices for safer vehicle operations.	\$0.170 STP (Funded but not initiated)
Signals, Columbus, Lowndes County, 02-7181-00(002)	BNSF crossing: Bell Ave. Project on hold due to estimates of \$404,000. Possible corridor safety study in Columbus. Completion date: TBD.	Upgrades warning devices for safer vehicle operations.	\$0.154 STP (Funded but not initiated)
Surface, D'Lo, Simpson County, 01-0064-00(017)	CN crossing: Jupiter Rd. Surface needs new construction; problem with super elevation and geometry at crossing. Survey pending. Completion date: TBD.	Upgrades surface of crossing for safer vehicle operations.	NA STP (Approved but not initiated)
Surface, Newton, Newton County, 01-0353-00-022	KCS crossing: Church St. Surface project canceled though funded and PE work performed, and panels purchased. Pending on location for materials to another MDOT project. Completion date: TBD.	Upgrades surface of crossing for safer vehicle operations.	\$0.024 STP (Funded but not initiated)
Signals and gates, Fernwood, Pike County, BR-0057(20)B	CN crossing: Airport Rd. State Aid Project in conjunction with Rails. Have construction estimates but on hold with state aid. Completion date: TBD.	Upgrades surface of crossing for safer vehicle operations.	NA BR/STP (Approved but not initiated)
Signals and gates, Gulfport, Hancock County, STP-0023-00(037)	CSXT crossings: Toulme St., Sycamore St., Citizen St. Transferred D6 funds from ARRA to city. Projects not started yet (4 total with funding shifts). Completion date: TBD.	Upgrades warning devices for safer vehicle operations.	\$0.420 STP (Funded but not initiated)
Gates, Bay St. Louis, Hancock County, STP-0023-00(037)	CSXT crossing: 2 nd St. Transferred D6 funds from ARRA to city. Projects not started yet (4 total with funding shifts). Completion date: TBD.	Upgrades warning devices for safer vehicle operations.	\$0.140 STP (Funded but not initiated)
Signals and gates, Hazelhurst, Copiah County, STP-0220-00(005)	CN crossing: Monticello. Approved assistance from city 12.20.2010. Tentative construction: March 2011.	Upgrades warning devices for safer vehicle operations.	\$0.186 STP (Funded but not initiated)

Crossing Projects			
Project Name	Project Description	Project Benefits	Cost (\$millions)
Signals, Ocean Springs, Jackson County, STP-0066-01(009)	CSXT crossing: MS 57. Pending assistance for traffic control from district. Completion date: TBD.	Upgrades warning devices for safer vehicle operations.	\$0.019 STP (Funded but not initiated)
Signals and gates, Pascagoula, Jackson County, STP-0370-00(024)	CSXT crossing: Fredrick. Pending let dates from city on when one way construction to two way construction is scheduled to work in conjunction with CSXT. Completion date: TBD.	Upgrades warning devices for safer vehicle operations.	\$0.285 STP (Funded but not initiated)
Surface, New Augusta, Perry County, STP-0224-00(046)	CN crossing: SR 29. Pending assistance for traffic control from district. Completion date: TBD.	Upgrades surface of crossing for safer vehicle operations.	\$0.060 STP (Funded but not initiated)
Surface, near Star, Rankin County, STP-0008-03(052)	CN crossing: Myers Rd. Pending assistance for traffic control from district. Completion Date: TBD.	Upgrades surface of crossing for safer vehicle operations.	\$0.045 STP (Funded but not initiated)
Surface, McClain, Greene County, STP-0006-03(003)	CN crossing: MS 57. Pending assistance for traffic control from district. Completion date: TBD.	Upgrades surface of crossing for safer vehicle operations.	\$0.060 STP (Funded but not initiated)
Surface, West, Holmes County, STP-0642-00(026)	GRYR crossing: Hwy 19. Pending work with GRYR. Completion date: TBD.	Upgrades surface of crossing for safer vehicle operations.	\$0.085 STP (Funded but not initiated)
Signals, gates and closures, Hattiesburg, Forrest County, STP-0210-00(023)	CN crossing: various streets. Hattiesburg corridor project projected to be completed from 2011-2014.	Eliminates crossing exposure at some crossings and upgrades warning devices at others for safer vehicle operations.	\$0.040 STP (Funded but not initiated)
Signals and gates Hattiesburg, Forrest County, STP-0210-00(023)	CN crossings: James, Buschman St., E. Front St., E. Pine St., 2 nd and Mobile, 4 th St., Stanley St., Old Hwy 42, 7 th St., 5 th St., Dixie Pine (Gulfport), Dixie Pine (Mobile), Barkley Rd., Industrial Rd. (JM Tatum) Sims Ralston Rd., Old Hwy 49. Hattiesburg corridor project projected to be completed from 2011-2014.	Upgrades warning devices for safer vehicle operations.	\$2.416 STP (Funded but not initiated)

Crossing Projects			
Project Name	Project Description	Project Benefits	Cost (\$millions)
Signals and gates, Biloxi, Harrison County, STP-0050-00(043, 045, 046, 047)	CSXT crossings: Iroquois Ave. Seal Ave., Magnolia Ave., Nixon St. FY10 Diagnostic performed, tentative estimates funded, but no work orders issued as review is still pending. Completion date: TBD.	Upgrades warning devices for safer vehicle operations.	\$0.835 STP (Funded but not initiated)
Signals and gates, Long Beach, Harrison County, STP-9366-00(001)	CSXT crossing: N. Lang Ave. FY10 Diagnostic performed, tentative estimates funded, but no work orders issued as review is still pending. Completion date: TBD.	Upgrades warning devices for safer vehicle operations.	\$0.250 STP (Funded but not initiated)
Signals and gates, Vicksburg, Warren County, STP-0440-00(012)	KCS crossing: Crawford St. FY10 Diagnostic performed, tentative estimates funded, but no work orders issued as review is still pending. Completion date: TBD.	Upgrades warning devices for safer vehicle operations.	\$0.250 STP (Funded but not initiated)
Signals and gates, Vicksburg, Warren County, 106060/309000	KCS crossing: Depot St. FY10 Diagnostic performed, tentative estimates funded, but no work orders issued as review is still pending. Completion date: TBD.	Upgrades warning devices for safer vehicle operations.	\$0.250 STP (Funded but not initiated)
Signals and gates, Clarksdale, Coahoma County, 106060/310000	MSDR crossing: 13 th St. FY10 Diagnostic performed, tentative estimates funded, but no work orders issued as review is still pending. Completion date: TBD.	Upgrades warning devices for safer vehicle operations.	\$0.250 STP (Funded but not initiated)
Total			\$9.550

APPENDIX D: LONG RANGE INVESTMENT PROGRAM

Project Name	Project Description	Project Benefits	Cost (\$millions)
Gulf Coast Stations Upgrade	Upgrade to modernize four Gulf Coast stations; Bay St. Louis, Gulfport, Biloxi, and Pascagoula. Completion date: TBD.	Provide improved access to a restored Gulf Coast rail service.	\$ 2.4 Source not determined
City of New Orleans Corridor Station Upgrade	Upgrade to assure ADA compliance at a state of good repair at the Greenwood and Jackson stations. Completion date: TDB.	Assurance of ADA compliance and a state of good repair for two stations.	\$2.5 Source not determined
Crescent Corridor Station Upgrade	Upgrade to assure ADA compliance at a state of good repair at the Hattiesburg and Meridian stations. Completion date: TBD.	Assurance of ADA compliance and a state of good repair for two stations.	\$5.1 Source not determined
New Orleans-Meridian Corridor Upgrade	Line capacity and signal improvements in Mississippi to support higher speed passenger rail service on the corridor. Completion date: TBD.	Enhance passenger mobility and safety needs.	\$251.6 Source not determined
New Orleans-Mobile Corridor Upgrade	Line capacity and signal improvements in Mississippi to support higher speed passenger rail service on the corridor. Completion date: TBD.	Enhance passenger mobility and safety needs.	\$287.5 Source not determined
Future Passenger Corridors Ridership and Capacity Studies	Ridership forecasts and line capacity analysis for future Mississippi passenger rail corridors: Meridian Speedway; New Orleans-Jackson-Memphis; Jackson-Hattiesburg-Gulfport. Completion date: TBD.	Prioritize corridors for implementation of passenger services.	\$0.3 Source not determined
Total			\$549.4

Freight Projects				
MDOT District	District Project	Project Description	Project Benefits	Cost \$ millions
1	1	Upgrade 23 miles of track and structures. Completion date: TBD.	Provide for more efficient operations and 286,000-lb carload capability.	\$10.4 Source not determined
	2	Construct rail bypass of Tupelo. Completion date: TBD.	Provide for more efficient operations and reduce rail-vehicular conflicts.	\$TBD Source not determined
	3	Upgrade 13 miles of track and structures. Completion date: TBD.	Provide for more efficient operations and 286,000-lb carload capability.	\$2.3 Source not determined
	4	Signalize 2 highway-rail at-grade crossings. Completion date: TBD.	Increase grade crossing safety.	\$0.4 Source not determined
	5	Add capacity for railroad interchange of traffic. Completion date: TBD.	Provide for more efficient operations and increase capacity for business development.	\$1.1 Source not determined
	6	Reopen 51 route miles of track currently out of service. Completion date: TBD.	Increase industrial development potential.	\$44.3 Source not determined

Freight Projects				
MDOT District	District Project	Project Description	Project Benefits	Cost \$ millions
	7	Upgrade 27 miles of track. Completion date: TBD.	Provide for more efficient operations and 286,000-lb carload capability.	\$17.0 Source not determined
	8	Upgrade 20 miles of track. Completion date: TBD.	Provide for more efficient operations and 286,000-lb carload capability.	\$6.3 Source not determined
	9	Replace cross ties in 11 miles of track. Completion date: TBD.	Provide for more efficient operations and rail safety.	\$0.15 Source not determined
	10	Construct industrial track. Completion date: TBD.	Increase rail traffic and industrial development potential.	\$TBD Source not determined
	11	Upgrade 11 miles of track. Completion date: TBD.	Provide for more efficient operation and port access.	\$2.0 Source not determined
	12	Upgrade selected structures and crossing warning devices. Completion date: TBD.	Increase industrial development potential.	\$1.5 Source not determined
	13	Upgrade structures on 36 route miles of track. Completion date: TBD.	Provide for 286,000-lb. carload capability.	\$4.5 Source not determined
2	1	Reopen 41 route miles of track currently out of service. Completion date: TBD.	Increase industrial development potential.	\$35.7 Source not determined
	2	Upgrade 135 miles of track and structures. Completion date: TBD.	Provide for more efficient operations and 286,000-lb. carload capability and increase industrial development potential.	\$84.9 Source not determined
	3	Upgrade 48 miles of track. Completion date: TBD.	Provide for more efficient operations and 286,000-lb. carload capability.	\$25.8 Source not determined
	4	Upgrade 60 miles of track. Completion date: TBD.	Provide for more efficient operations and 286,000-lb. carload capability.	\$30.8 Source not determined
	5	Rebuild 10 route miles of track and re-establish rail-barge service between Mississippi and Arkansas. Completion date: TBD.	Provide short line rail bypass of Memphis and increase industrial development potential.	\$TBD Source not determined
3	1	Upgrade 40 miles of track and structures. Completion date: TBD.	Provide for more efficient operations and 286,000-lb. carload capability and increase industrial development potential.	\$25.1 Source not determined
	2	Reopen 32 route miles of track currently out of service. Completion date: TBD.	Increase industrial development potential and port access.	\$20.2 Source not determined

Freight Projects				
MDOT District	District Project	Project Description	Project Benefits	Cost \$ millions
	3	Upgrade 21 miles of track. Completion date: TBD.	Provide for more efficient operations and 286,000-lb. carload capability and port access.	\$13.2 Source not determined
5	1	Upgrade 7 miles of track and structures. Completion date: TBD.	Provide for more efficient operations and 286,000-lb. carload capability and increase industrial development potential.	\$4.4 Source not determined
	2	Grade separation of 2 railroads. Completion date: TBD.	Provide for more efficient operations and capacity increases.	\$150.0 Source not determined
	3	Construct 2 rail-highway at-grade crossing separations. Completion date: TBD.	Reduce rail-vehicular conflicts and improve safety.	\$33.0 Source not determined
	4	Upgrade 10 miles of track and bridges. Completion date: TBD.	Provide for more efficient operation and increase industrial development potential.	\$10.0 Source not determined
	5	Realign and rebuild connection between two railroads. Completion date: TBD.	Provide for more efficient connection with and interchange of traffic with other railroads.	\$1.0 Source not determined
	6	Replace highway overpass. Completion date: TBD.	Continued rail-vehicular conflict reduction and safety.	\$2.0 Source not determined
	7	Replace 8 miles of rail. Completion date: TBD.	Provide 286,000-lb. carload capability.	\$TBD Source not determined
	8	Upgrade 8 route miles of track and selected structures and rail replacement. Completion date: TBD.	Provide for more efficient operations and 786,000-lb. carload capability.	\$5.4 Source not determined
6	1	Improve access to Gulf Coast ports and interchange between railroads. Completion date: TBD.	Provide potential for more competitive rail service.	\$TBD Source not determined
	2	Upgrade 76.5 miles of line including structures and grade crossings, construct new sidings and other improvements. Completion date: TBD.	Provide for more efficient operations including capacity, operating speed, and clearances.	\$30.0 Source not determined
	3	Replace 10 miles of rail. Completion date: TBD.	Provide 286,000-lb. carload capability.	\$TBD Source not determined
7	1	Upgrade 66 route miles of track. Completion date: TBD.	Provide for more efficient operations and 286,000-lb. carload capacity.	\$TBD Source not determined
			Total	\$561.45

