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Louisiana Freight Mobility Plan

prepared for

Louisiana Department of Transportation and Development

prepared by

CDM Smith Inc.

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1. INTRODUCTION AND SUMMARY OF RECOMMENDATIONS

Every business and resident in Louisiana depends on the freight transportation system of roads, railroads, waterways, airports and pipelines for the commodities they use daily. Every investment in the freight transportation system that increases throughput, improves efficiency and reduces costs has a direct positive impact on Louisiana's economy. At the same time, freight transportation requires significant expenditures of energy to move large quantities of industrial and consumer goods over long distances. Many agencies and businesses develop policies, investments and programs to understand and mitigate the risks of freight transportation, and to improve environmental quality and safety for all transportation system users.

Increasingly, federal legislation has provided incentives for states to focus on freight transportation investments. In 2012, the U.S. Congress passed the Moving Ahead for Progress in the 21st Century Act (MAP-21), which encouraged all state departments of transportation to develop a comprehensive state freight transportation plan. More recently, the provisions embodied in the 2015 *Fixing America's Surface Transportation Act* (FAST Act) establish new dedicated freight programs and funding sources, intended to address freight needs that produce public benefits.

The Louisiana Freight Mobility Plan is designed to meet the requirements of the FAST Act of 2015. Prior to the FAST Act, the State had fulfilled the recommendations of the previous MAP-21 through its proactive freight planning programs. It is also intended to serve the unique needs of the Louisiana Department of Transportation and Development (DOTD) and its partners to improve freight transportation by identifying needs, recommending policies, and devising implementation strategies. The Plan considers highway, rail, aviation, and port and waterway needs. The Plan also describes the pipeline system, but does not provide investment or policy recommendations for it.

The Plan has a long-term, 25-year perspective on needs and issues. How and where freight moves depend on many factors, including demographics, economic conditions and competitiveness, consumer demand, government regulations, transport technologies and international politics and trade policies. All of these factors are in flux, making long-term predictions and recommendations more useful as a guide for establishing general priorities than as a specific prescription. The Plan takes a short-term view as well, and has considered the value of the current Highway Priority Program[1] (HPP) to freight transportation.

The Plan can be viewed in its entirety online at:
http://wwwsp.dotd.la.gov/Inside_LaDOTD/Divisions/planning

[1] *The one year construction program and the list of other projects in various stages are combined into an annual document that is called the Highway Priority Program or Highway Program.*

1.1 Summary of Investment Recommendations

1.1.1 Capital Investments

The Plan estimates a need for $51.7 billion in projects (**Table 1-1**) that can improve freight mobility over the 25-year timeframe of the plan. This estimate includes projects in the current Highway Priority Program (HPP), the current Statewide Transportation Improvement Program (STIP), future STIPs by reference, mega projects and other mode specific needs identified in this Plan. Considering a range of revenue projections developed in the long-range multimodal transportation plan ($18.5 billion-$35.1 billion), there is a large gap between the available funding for freight projects and the need. This underscores the importance of project selection processes and programs that address the most important modal needs, provide the greatest return on investment, and that, whenever possible, promote cost-sharing among partners and beneficiaries.

Table 1-1: Twenty-Five Year Capital Needs Summary

Mode	Needs ($ millions)
Highway	$32,591.1
Rail	$1,144.4
Ports/Waterways	$7,485.6
Aviation	$10.6
Mega Projects Highway (A&B only)	$8,325.0
Non-Highway Mega Projects (A&B only)	$2,112.0
Total	**$51,668.7**

The plan team has an extensive base of information to draw upon for the freight needs analysis. The needs estimate consists of:

- Reviewing the transportation gaps, needed programs and policies that emerged from discussions with stakeholders specific to this plan
- Reviewing the projects, revenue forecasts, surveys and analysis developed from Louisiana's rail, aviation, and statewide transportation plans
- Reviewing the roster of projects and programs with the designation of the state freight network as a Tier 1, Tier 2, or Tier 3 facility
- Reviewing information on freight bottlenecks and other needs relative to the DOTD's HPP and megaproject list
- Comparing potential projects, programs and policies for their compatibility with the Freight Plan's goals and objectives

1.2 Louisiana's Fiscally Constrained Freight Investment Plan

The Freight Plan lists the eligible and freight-beneficial projects that are supported by National Highway Freight Program Funds (NHFP). The Fiscally Constrained Freight Investment Plan also describes all sources of funding for each NHFP project as well as its location.

1.3 Summary of Policy and Program Recommendations

The Plan cites several process and policy-oriented recommendations that are intended to promote plan implementation and ultimately increase the visibility of freight needs in the state. These are described below.

1.3.1 Policy recommendations

- Ensure freight representation and participation by the private sector in the state planning process
- Support collaboration between DOTD and the Louisiana Department of Economic Development (LED) in identifying transportation needs, issues and impacts, and in recruiting industry and business to locate in Louisiana
- Leverage public-private partnerships to fund transportation improvements
- Support the multi-state coordination of freight infrastructure improvements
- Update freight modal systems plans on a regular basis

1.3.2 Program recommendations

- Maintain and improve the designated Louisiana Freight Network to ensure the freight system continues to move toward achieving the transportation goals identified in the 2015 Louisiana Statewide Transportation Plan and the 2017 Louisiana Freight Mobility Plan
- Use DOTD's freight project prioritization framework to help decision-makers prioritize future freight investments
- Refine performance measures to track implementation progress
- Develop a process to identify, monitor, and restore the condition of special truck routes that support the energy and mining industry

1.4 State Freight Plan and Dedicated Federal Freight Funding Program

The current federal transportation law, FAST Act, provides dedicated funding for surface transportation projects for fiscal years 2016 to 2020 and outlines the requirements for the National Highway Freight Program (NHFP). The annual national appropriation for the NHFP is expected to be $1.2 billion. Eligible projects include construction, operational improvements, freight planning, and improving freight data collection and analysis capabilities. In order to obligate funds under the NHFP, states are required to have a State Freight Plan, which must at a minimum:

1. Identify significant freight system trends, needs, and issues within the State;

2. Describe freight policies, strategies, and performance measures that will guide the State's freight-related investment decisions;

3. List, as applicable, multimodal critical rural freight facilities and corridors designated under the National Multimodal Freight Network (49 U.S.C. § 70103), and the critical rural and urban freight corridors designated under the National Highway Freight Program (23 U.S.C. § 167);

4. Describe how the plan will enable the State to meet the national multimodal freight policy goals (49 U.S.C. § 70101[b]) and the national freight program goals (23 U.S.C. § 167);

5. Describe innovative technologies and operational strategies, including freight intelligent transportation systems, that improve the safety and efficiency of freight movement;

6. Describe improvements to hinder or mitigate the deterioration of roadways serving heavy vehicles;

7. Provide an inventory of facilities within the State with freight mobility issues (such as bottlenecks), and describe potential strategies to address such issues for State-owned or operated facilities;

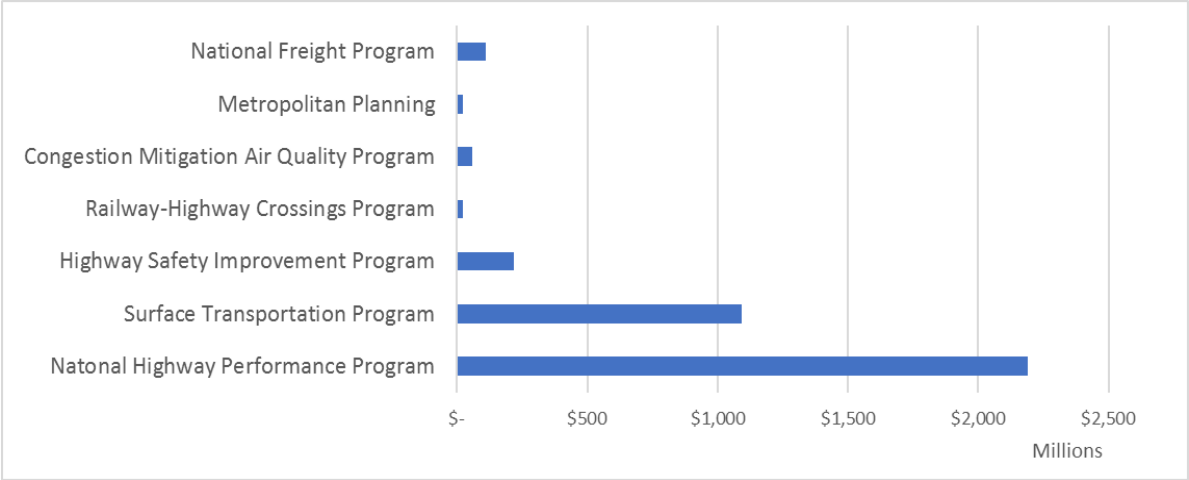
8. Consider any significant congestion or delay caused by freight movements and potential strategies to mitigate that congestion or delay;

9. Include a freight investment plan listing priority projects and funding mechanisms; and

10. Consult with the State Freight Advisory Committee, as applicable.

Louisiana has access to several surface transportation programs that may fund freight projects, but National Highway Freight Program funds are dedicated for that purpose. The NHFP is funded at $112.2 million over the FY16-FY20 lifetime of the Fast Act, and this amounts to 3.0 percent of the $3.6 billion surface transportation program. **Table 1-2** presents the Fast Act's major surface transportation funding programs and the funding levels for each.

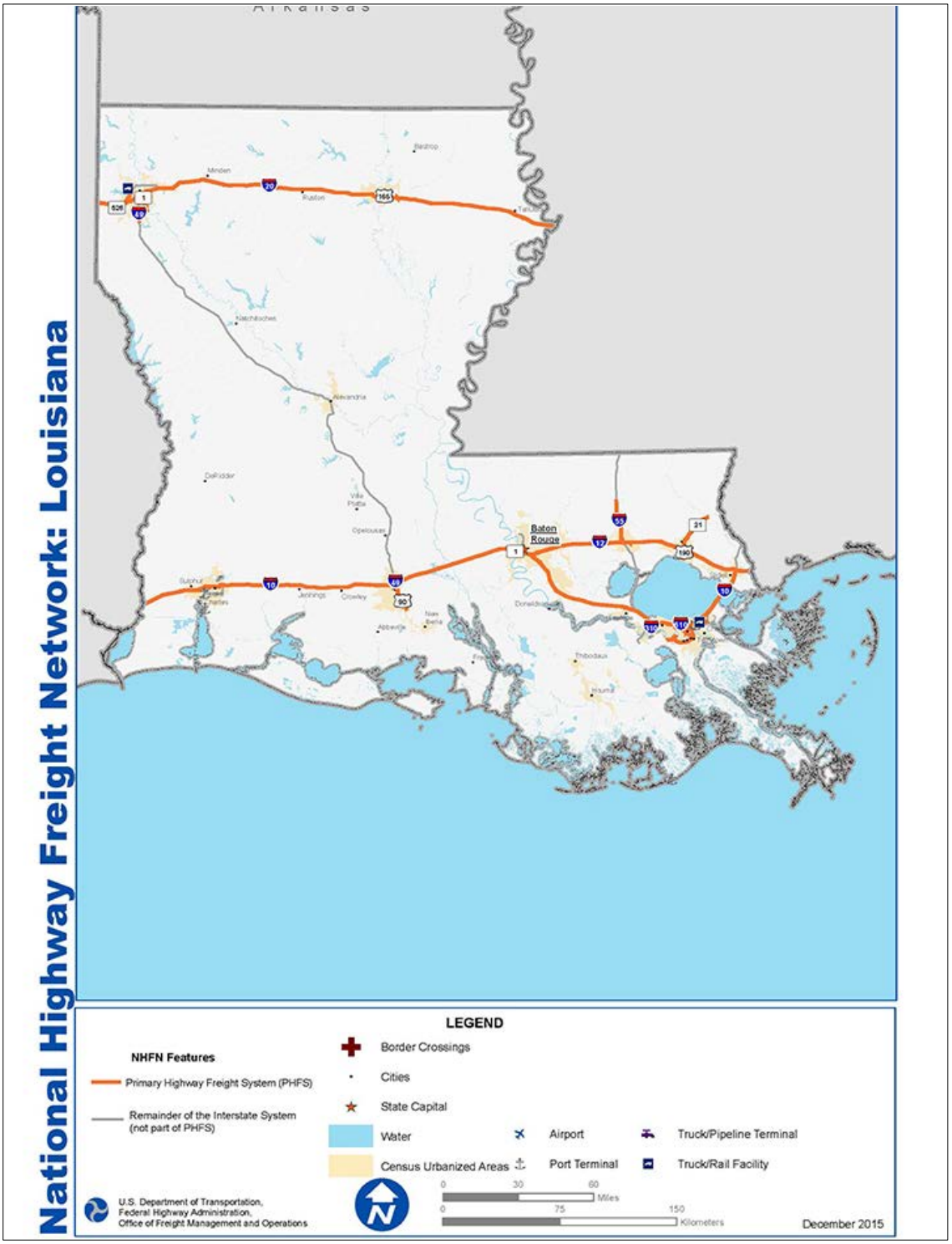
Table 1-2: Louisiana Fast Act Appropriations



Source: FHWA and DOTD, 2016

The establishment of a National Highway Freight Network by the FHWA was required by the Fixing America's Surface Transportation (FAST) Act. This network comprises the Primary Highway Freight System (PHFS), State- and MPO-designated critical rural and urban freight corridors (if applicable), intermodal connectors and other portions of the Interstate Highway System that do not fall within the PHFS. Portions of non-PHFS Interstates in states whose total interstate mileage accounts for less than two percent of the nation's total interstate mileage are part of the National Highway Freight Network, and National Highway Freight Program funds may be applied to them as well. **Figure 1-1** presents the Louisiana components of the National Highway Freight System.

Figure 1-1: Louisiana Components of National Highway Freight Network



Source: FHWA

2. STRATEGIC GOALS AND OBJECTIVES

Coordinated strategic goals and objectives provide the framework for implementing the Freight Mobility Plan in a consistent and complementary way. The goals have been coordinated with other relevant statewide plans, to promote positive outcomes in interactions with the State's transportation and non-transportation systems and to ensure consistency with federal and state planning and investment initiatives.

2.1 Federal Requirements

The federal surface transportation act MAP-21 and its successor the FAST Act, focus on establishing a national performance-based program for transportation. MAP-21 established a freight transportation network and national surface transportation goal areas. It also created requirements for the U.S. Department of Transportation (USDOT) to develop national transportation performance measures and to promulgate rules to implement them. MAP-21 established a national freight movement and economic vitality goal focused on improving the national freight network, strengthening the ability of rural communities to access national and international trade markets, and supporting regional economic development. To achieve this, the law required the USDOT to develop a National Freight Policy, which included the following goals:

- **Economic Competitiveness** – Invest in infrastructure improvements and implement operational improvements that strengthen the contribution of the national freight network to the economic competitiveness of the U.S.; reduce congestion; and increase productivity, particularly for domestic industries and businesses that create high-value jobs
- **Safety, Security, Resiliency** – Improve the safety, security, and resilience of freight transportation
- **State of Good Repair** – Improve the state of good repair of the national freight network
- **Advanced Technology** – Use advanced technology to improve the safety and efficiency of the national freight network
- **Performance and Accountability** – Incorporate concepts of performance, innovation, competition, and accountability into the operation and maintenance of the national freight network
- **Economic Efficiency** – Improve the economic efficiency of the national freight network
- **Environmental** – Reduce the environmental impacts of freight movement on the national freight network

The FAST Act continues these policies and establishes new policies and programs as well. The FAST Act established new freight-specific funding programs, new requirements for states to update their freight plans every 5 years and a Port Performance Program. These provisions will raise the visibility of and focus on freight transportation needs.

2.2 Coordination with Relevant Plans

Louisiana's freight goals, objectives and performance measures assimilate the freight-relevant components of Louisiana's multimodal, rail, aviation and marine plans, as well as Metropolitan Planning Organizations (MPOs) Metropolitan Transportation Plans, studies, and initiatives involving Louisiana's freight system. The following highlights the findings and recommendations from the planning efforts and other initiatives that are relevant to the development of Louisiana's freight goals.

2.2.1 Statewide Transportation Plan

The 2015 Louisiana Statewide Transportation Plan (STP) describes and assesses the State's transportation system, including passenger and freight. The STP provided a majority of the freight-related issues and needs used to develop the Freight Plan's goals. The STP goals listed below are in alignment with the Freight Plan's goals:

- **Goal Area #1: Infrastructure Preservation and Maintenance** – Preserve Louisiana's multimodal infrastructure in a state of good repair through timely maintenance of existing infrastructure
- **Goal Area #2: Safety** – Provide safe and secure travel conditions across all transportation modes through physical infrastructure improvements, operational controls, programs, and public education and awareness
- **Goal Area #3: Economic Competitiveness** – Provide a transportation system that fosters diverse economic and job growth, international and domestic commerce, and tourism
- **Goal Area #4: Community Development and Enhancement** – Provide support for community transportation planning, infrastructure and services
- **Goal Area #5: Environmental Stewardship** – Ensure transportation policies and investments are sensitive to Louisiana's environment, history, and culture

2.2.2 Other Relevant Plans, Studies and Initiatives

Louisiana Marine Transportation System Plan

The Louisiana Marine Transportation System Plan was published in 2007. It summarizes the impact of Louisiana's extensive navigable waterway system on the state's economy and identifies infrastructure improvements to optimize the system's operational efficiency for future economic growth and congestion mitigation. Improving the operational capacity of the waterway system and increasing the economic benefits to the state and the nation are the overriding objectives identified in the Plan.

Louisiana State Rail Plan

The 2015 Louisiana State Rail Plan was developed as part of the STP and includes the following freight rail objectives:

Freight Rail Objectives

- Improve the interchange of Class I[2] rail traffic in New Orleans
- Increase the number of miles of track capable of 286,000-pound (lb.) car weights on the state's short line[3] railroads
- Minimize accidents, injuries, and fatalities at highway-rail grade crossings in Louisiana through crossing closures, safety improvements and grade separations
- Encourage economic development through investments in the rail system, e.g., improved access to marine and river ports, new intermodal facilities, and new industrial leads and spurs
- Establish a designated Rail Program empowered to assist in funding rail improvements, and
- Leverage public-private partnerships for funding rail improvements

Louisiana Airport System Plan

The 2015 Louisiana Airport System Plan was also updated as part of the Statewide Transportation Plan update. Louisiana seeks to incorporate all aspects of this plan to develop new DOTD processes, policies and procedures and implement revisions to the Louisiana Administrative Code for program development and administration. The Airport System Plan identifies performance criteria as broad conditions or goals that the state seeks to achieve so that its aviation system can perform as desired. The following three performance criteria are discussed in the Airport System Plan:

- **Access** – Louisiana seeks to provide adequate access by air to the state's population for purposes of transportation, safety enhancement, and economic development

- **Economic** – Louisiana seeks to provide an aviation system that supports the local, regional, and state economies by enabling the rapid and efficient movement of people and products that rely on aviation

- **Physical** – In order for the aviation system to function as intended, the DOTD will assist the individual airports that need certain physical facilities in sufficient quantities to be able to provide safe and secure services that meet the role the airport is intended to fulfill in the system

2.3 Louisiana Freight Mobility Plan Goals, Objectives, and Performance Measures

The Louisiana Freight Mobility Plan provides guidance to the DOTD on freight and goods movement-related policy and investment needs. It also shares a broad, consensus definition of a desired level of performance across the many systems that freight interacts with. A key part of freight planning is the development of goals and objectives that form the core of the Freight Plan. The following goal areas were established after reviewing the National Freight Policy goals and statewide plans with a freight

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[2] *Class I railroads have the highest operating revenues, carry freight the longest distances and carry the highest volumes of freight compared to Class II or Class III railroads. There are 7 Class I railroads in the U.S. and account for over 93% of the railroad industry's revenue.*

[3] *Generally, short-line railroads provide access to a small number of towns and industries. They may haul cars for one or more larger railroads.*

component, stakeholder input gathered during the development of the 2015 STP, and input from the Freight Advisory Committee.

A. **Economic Competitiveness and Efficiency** – Improve the freight transportation system for better economic efficiency, productivity, and competitiveness

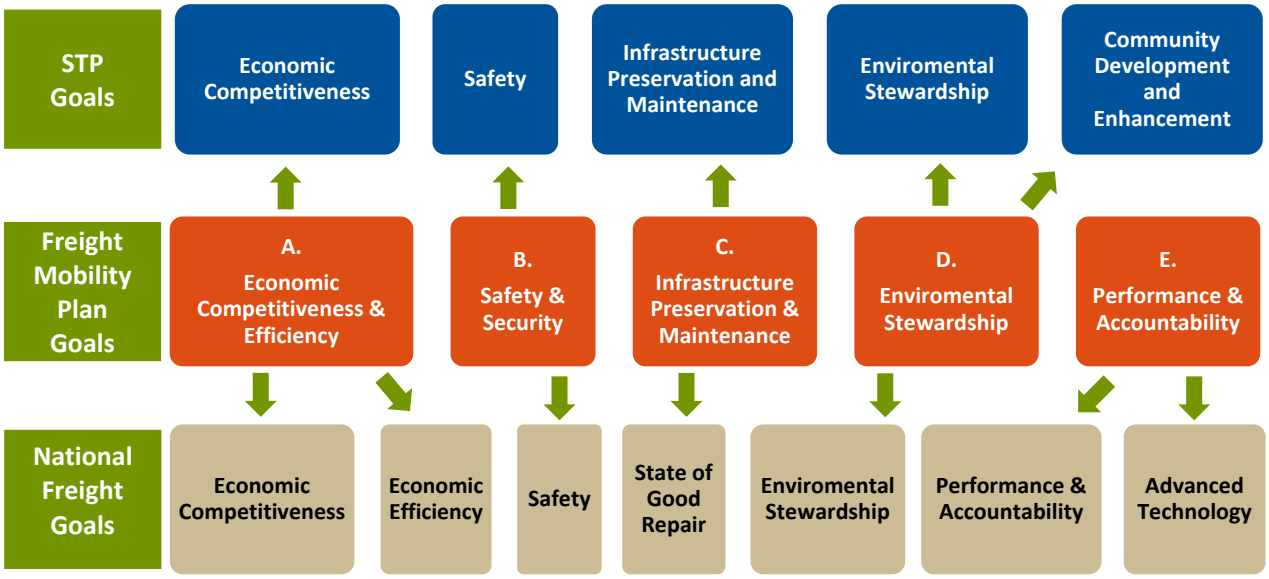
B. **Safety and Security** – Improve the safety, security, and resilience of the freight transportation system

C. **Infrastructure Preservation and Maintenance** – Improve and maintain the freight transportation system to ensure a state of good repair

D. **Environmental Stewardship** – Reduce adverse environmental and community impacts of the freight system

E. **Performance and Accountability** – Use advanced technology, performance management, innovation, competition, and accountability to assist with congestion mitigation, operations, and maintenance of the freight transportation system

Figure 2-1: Alignment of LFMP Goal Areas with the Louisiana STP and National Freight Goals



The Freight Plan identifies a set of objectives that articulate DOTD's freight investment priorities, help define freight system investment needs, and identify the desired future performance of the Strategic Freight Network. Additionally, a set of performance measures linked to selected objectives were developed. The measures are tied to quantitative information where available, or qualitative information. The measures are intended to guide future investment decisions and can also be used to assess the progress of the plan's implementation. A guiding principal in developing measures is that they utilize existing performance data and leverage current (or planned) data collection activities.

The performance measures will be defined further in forthcoming planning activities. DOTD's Five Year Strategic Management Plan identifies transportation performance measures with clear definitions and specific performance targets. Additionally, FHWA continues to develop national performance management standards for the National Highway System, which encompasses a large share of Louisiana's high capacity highway system. The Freight Plan's objectives and performance measures are provided below.

2.3.1 Goal A: Economic Competitiveness and Efficiency

Improve the Louisiana freight transportation system for better economic efficiency, productivity, and competitiveness.

Table 2-1: Economic Competitiveness and Efficiency Objectives and Performance Measures

Objectives	Performance Measures
• Improve the efficiency of freight transportation and the capacity of freight-related infrastructure throughout Louisiana • Improve freight network access • Improve access to freight generators including energy activity areas and freight related businesses	• Percent of short line freight rail system capable of supporting 286K lb. cars • Percent of NHS intermodal connectors meeting pavement condition targets

2.3.2 Goal B: Safety and Security

Improve the safety of the freight transportation system.

Table 2-2: Safety and Security Objectives and Performance Measures

Objectives	Performance Measures
• Reduce rates of crashes, fatalities, and injuries involving freight-carrying vehicles on the highway network • Provide adequate truck parking availability • Assist modal partners in achieving safe aviation, port, rail, and waterway performance	• Number of crashes and fatal crashes involving trucks (and rate) • Number of crashes at rail crossings • Number of collisions on waterways • Total number of rail/highway at-grade crossings by type (i.e. signed, signaled, gates, etc.) on Class I and Short Line rail lines • Number of public truck parking spaces

2.3.3 Goal C: Infrastructure Preservation and Maintenance

Improve and maintain the freight transportation system to ensure a state of good repair.

Table 2-3: Infrastructure Preservation and Maintenance Objectives and Performance Measures

Objectives	Performance Measures
• Keep Louisiana's state highway pavement, bridges, and highway related assets in good condition • Assist modal partners in achieving state-of-good-repair for aviation, port, rail, and navigable waterway infrastructure	• Percent of structurally deficient bridges by deck area on freight network Tiers 1, 2, and 3 • Percent of freight network Tiers 1, 2, and 3 meeting pavement condition targets • Number of weight-restricted bridges on the freight network • Percent of publicly-owned airports meeting the State's standards • Number of vertical restrictions on the freight network

2.3.4 Goal D: Environmental Stewardship

Reduce adverse environmental and community impacts of the freight system.

Table 2-4: Environmental Stewardship Objectives and Performance Measures

Objectives	Performance Measures
• Reduce the environmental impacts of building, maintaining, and operating Louisiana's transportation system • Reduce impact of freight movement in urban areas	• Number of freight crashes that require environmental cleanup • Acres of wetlands impacted by DOTD or DOTD-funded projects

2.3.5 Goal E: Performance and Accountability

Use advanced technology, performance management, innovation, competition, and accountability to assist with congestion mitigation, operations, and maintenance of the freight transportation system.

Table 2-5: Performance and Accountability Objectives and Performance Measures

Objectives	Performance Measures
• Minimize congestion on the IHS • Minimize the time Tiers 1 and 2 of the freight network suffer interruption from an incident • Address bottlenecks on the freight network	• The percentage of miles on freight network Tiers 1 and 2 in an uncongested condition • Number of bottlenecks on freight network addressed by capital projects • Hours of downtime on Tiers 1 and 2 resulting from incidents

3. ECONOMIC CONTEXT OF FREIGHT

Freight transportation is a key driver of Louisiana's economy. Companies that provide transportation services and industries that use such services to transport goods generate economic impacts. The freight system transports raw materials and finished goods, and provides jobs that are critical to the economies of rural and urban regions throughout the state.

The freight transportation network moves a wide variety of commodities for manufacturing, mining, agriculture, petroleum, food and other industries, to produce and supply goods critical to the growth of the Louisiana economy. This economy depends on the movement of raw materials, parts and finished goods between Louisiana companies, as well as between Louisiana and national and international markets. Competing in the rapidly changing global environment requires an understanding of the goods that are produced and traded throughout the State; trends in economic development; domestic and international trade, and global supply chains that link industries and companies working to produce a finished product.

3.1 Freight and the Louisiana Economy

In Louisiana, freight activity is nearly synonymous with economic activity. Economic indicators such as gross state product and employment by industry portray the value of freight activity to Louisiana, which is a freight-dependent state.

3.1.1 Gross State Product

The Gross State Product (GSP) is an economic measure of economic activity in a state. It also can help describe the relationship between freight activity in Louisiana and the State's economic make up. When viewed as a trend over time, it describes how the State's industry composition has changed and is projected to change, and the relative concentration of particular industry sectors in Louisiana.

A common economic metric for understanding and validating the industries that are important to Louisiana is the location quotient, or LQ. The LQ describes the relative concentration of industry-specific economic activity in a state, compared to the same industries in the United States as a whole, and it is measured as the ratio of an industry's share of a state's economy to the industry's share in the national economy. An industry with a LQ greater than one indicates a concentration of activity in that sector, and LQ's less than one indicate activity lower than the national average.

Economic activity is generated by the exchange of goods and services. The exchange of physical goods, and therefore freight movement, is more concentrated in some industries than others, especially regarding the input materials necessary for production, or the distribution of final goods. The industries that are relatively more freight-intensive are those that produce, sell, and distribute final products or intermediate materials. Generally, such industries correspond to those in the low-number codes of the North American Industry Classification System (NAICS) and include those shown in **Table 3-1**.

Table 3-1: Freight-Intensive Industries

NAICS	Industry Description
11	Agriculture, Forestry, Fishing/Hunting
21	Mining, Quarrying, and Oil and Gas
22	Utilities
23	Construction
31-33	Manufacturing
42	Wholesale Trade
44-45	Retail Trade
48-49	Transportation and Warehousing

Other two-digit NAICS industries are more service-oriented. While service industries are not entirely absent of freight-related activities, they rely less on freight than the manufacturing, resource extraction and trade industries. The GSP of freight-intensive goods-related industries are subtotaled in the tables below to provide as a top-level gauge of how economic activity in Louisiana loosely relates to freight activity.

According to the latest available data from the U.S. Bureau of Economic Analysis (BEA),[4] real GSP in Louisiana increased by a compound average annual growth rate (CAAGR) of 1.2 percent during the decade spanning 2003 through 2013, as shown in **Table 3-2**. Such relatively modest real economic growth during the recent decade reflects the sharp national recession in late-2007 through mid-2009[5] and the slow recovery thereafter; in comparison, the national economy expanded by just 1.5 percent per year (CAAGR) during the same period.

[4] *As of March 2015; latest available year of actual historical data: 2013.*
[5] *National Bureau of Economic Research; http://www.nber.org/cycles.html.*

Table 3-2: Louisiana Historical Real Gross State Product ($ millions)

NAICS	Industry Description	2003			2013			'03-'13 CAAGR
		GSP	%	LQ	GSP	%	LQ	
11	Agriculture, Forestry, Fishing/Hunting	$1,374	*0.7%*	0.82	$2,154	*1.0%*	0.96	4.6%
21	Mining, Quarrying, and Oil and Gas	$19,005	*9.6%*	5.97	$17,711	*8.0%*	3.53	-0.7%
22	Utilities	$4,997	*2.5%*	1.34	$4,337	*1.9%*	1.03	-1.4%
23	Construction	$9,890	*5.0%*	0.90	$12,189	*5.5%*	1.47	2.1%
31-33	Manufacturing	$42,601	*21.6%*	1.76	$44,727	*20.1%*	1.61	0.5%
42	Wholesale Trade	$9,490	*4.8%*	0.80	$10,717	*4.8%*	0.83	1.2%
44-45	Retail Trade	$12,456	*6.3%*	0.96	$13,788	*6.2%*	1.07	1.0%
48-49	Transportation and Warehousing	$5,337	*2.7%*	1.02	$9,585	*4.3%*	1.50	6.0%
51	Information	$3,240	*1.6%*	0.42	$4,618	*2.1%*	0.40	3.6%
52	Finance and Insurance	$6,135	*3.1%*	0.48	$6,943	*3.1%*	0.48	1.2%
53	Real Estate and Rental and Leasing	$16,677	*8.5%*	0.68	$23,793	*10.7%*	0.80	3.6%
54	Professional, Scientific, Technical	$7,581	*3.8%*	0.59	$10,144	*4.6%*	0.64	3.0%
55	Management of Enterprises	$2,571	*1.3%*	0.61	$2,894	*1.3%*	0.63	1.2%
56	Administrative/Waste Management	$3,720	*1.9%*	0.69	$5,485	*2.5%*	0.81	4.0%
61	Educational Services	$1,486	*0.8%*	0.74	$1,781	*0.8%*	0.75	1.8%
62	Health Care and Social Assistance	$11,362	*5.8%*	0.88	$13,350	*6.0%*	0.83	1.6%
71	Arts, Entertainment, and Recreation	$2,624	*1.3%*	1.35	$2,342	*1.1%*	1.04	-1.1%
72	Accommodation and Food Services	$5,829	*3.0%*	0.99	$6,485	*2.9%*	1.04	1.1%
81	Other Services, Except Government	$4,734	*2.4%*	0.89	$4,515	*2.0%*	0.96	-0.5%
92	Government	$25,904	*13.1%*	0.94	$24,910	*11.2%*	0.89	-0.4%
	Total	**$197,013**	***100.0%***		**$222,468**	***100.0%***		**1.2%**
	Subtotal: Freight-Intensive	**$105,150**	***53.4%***	**1.43**	**$115,208**	***51.8%***	**1.44**	**0.9%**

Source: Bureau of Economic Analysis. GSP: Gross State Product (in millions of chained 2009 dollars). LQ: Location Quotient

Industries in Louisiana experienced varied growth patterns during the recent decade. Utilities (NAICS 22) exhibiting the largest relative contraction within the State, at a CAAGR of negative 1.4 percent. At the other end, Transportation and Warehousing (NAICS 48-49) expanded by a CAAGR of 6 percent, equating to an almost doubling in real economic activity, from $5.3 billion (in 2009 chained dollars) in 2003 to $9.6 billion in 2013.

In terms of economic composition, the industries generally considered relatively more freight-intensive comprise a majority of GSP in Louisiana (53.4 percent in 2003 and 51.8 percent in 2013). Service-related industries however, grew at a faster pace than did freight-related industries during that period (1.56 percent vs. 0.90 percent). Despite the slower growth, the freight-intensive industries are comparatively more concentrated in Louisiana than in the nation – about 44 percent more concentrated, historically.

Generally, credible and consistent real GSP forecasts by industry are unavailable; but, aggregate GSP forecasts are. According to Woods & Poole Economics, Inc.[6], the Louisiana economy is projected to grow by a CAAGR of 2.1 percent in the period from 2014 through 2040, while the national economy (gross domestic product) is projected to grow at a slightly higher 2.3 percent CAAGR, see **Table 3-3**.

Table 3-3: Forecast Real Gross State Product/Gross Regional Product ($ millions)

Geography	2014	2040	CAAGR
Louisiana	$242,292	$413,058	2.1%
United States	$15,356,265	$27,574,201	2.3%

GSP and GDP in millions of 2009 dollars
Source: Woods & Poole Economics, Inc.; 2014 Complete Economic and Demographic Data Source (CEDDS)

While real GSP forecasts by industry are typically unavailable, employment forecasts by industry are available, which serve as a loose proxy for overall monetized economic activity. According to the data available from Woods & Poole Economics, Inc., goods-related/freight-intensive industries are, in aggregate, projected to grow at an average annual rate (1.9 percent CAAGR), which is slower than services-related industries (and thus, the overall pace of total economic growth).

3.1.2 Freight Related Employment

A similar historical pattern of economic activity is observed within the employment data for the same recent decade and industry detail. Freight-intensive industries are relatively more concentrated in Louisiana than the nation, from an employment perspective, albeit, not as concentrated as from the perspective of real GSP[7].

In terms of annual employment, the freight-intensive industries comprise about 35 percent of Louisiana workers. In the past decade, employment in these industries increased by about 50,000, corresponding to a 0.5 percent CAAGR, as per **Table 3-4**. While this growth rate seems low, it compares favorably with national trends. Employment in the same aggregated freight-intensive industries declined by a CAAGR of negative 0.2 percent nationally. This explains why the relative concentration of freight-intensive industry employment in Louisiana (as per the LQ) increased from 2003 to 2013.

[6] *Woods & Poole Economics, Inc. Washington, D.C. Copyright 2014. Woods & Poole does not guarantee the accuracy of this data. The use of this data and the conclusion drawn from it are solely the responsibility of the consultant.*
[7] *This also indicates relatively higher productivity/employee in Louisiana for such freight-intensive industries, as compared with the entire nation.*

Table 3-4: Louisiana Historical Employment

NAICS	Industry Description	2003			2013			'03-'13 CAAGR
		Emp.	%	LQ	Emp.	%	LQ	
11	Agriculture, Forestry, Fishing/Hunting	18,535	*0.8%*	1.64	18,758	*0.7%*	1.43	0.1%
21	Mining, Quarrying, and Oil and Gas	55,294	*2.3%*	4.73	83,177	*3.2%*	3.57	4.2%
22	Utilities	10,108	*0.4%*	1.19	9,498	*0.4%*	1.13	-0.6%
23	Construction	169,873	*7.1%*	1.17	188,175	*7.2%*	1.40	1.0%
31-33	Manufacturing	162,082	*6.8%*	0.74	153,294	*5.9%*	0.83	-0.6%
42	Wholesale Trade	81,174	*3.4%*	0.92	80,100	*3.1%*	0.87	-0.1%
44-45	Retail Trade	266,814	*11.2%*	1.00	269,567	*10.4%*	1.01	0.1%
48-49	Transportation and Warehousing	90,578	*3.8%*	1.17	99,205	*3.8%*	1.14	0.9%
51	Information	33,842	*1.4%*	0.64	31,851	*1.2%*	0.68	-0.6%
52	Finance and Insurance	89,747	*3.8%*	0.77	107,044	*4.1%*	0.75	1.8%
53	Real Estate and Rental and Leasing	75,778	*3.2%*	0.86	105,053	*4.0%*	0.91	3.3%
54	Professional, Scientific, Technical	113,782	*4.8%*	0.76	138,540	*5.3%*	0.77	2.0%
55	Management of Enterprises	22,873	*1.0%*	0.88	28,755	*1.1%*	0.88	2.3%
56	Administrative/Waste Management	124,722	*5.2%*	0.87	151,442	*5.8%*	0.92	2.0%
61	Educational Services	42,377	*1.8%*	0.88	50,808	*2.0%*	0.83	1.8%
62	Health Care and Social Assistance	238,431	*10.0%*	1.01	291,285	*11.2%*	0.98	2.0%
71	Arts, Entertainment, and Recreation	51,967	*2.2%*	1.08	53,417	*2.1%*	0.90	0.3%
72	Accommodation and Food Services	174,425	*7.3%*	1.07	201,215	*7.7%*	1.06	1.4%
81	Other Services, Except Government	146,901	*6.2%*	1.05	164,254	*6.3%*	1.07	1.1%
92	Government	416,635	*17.5%*	1.20	378,040	*14.5%*	1.08	-1.0%
	Total Non-Farm Employment	**2,385,938**	***100.0%***		**2,603,478**	***100.0%***		**0.9%**
	Subtotal: Freight-Intensive	**854,458**	***35.8%***	**1.03**	**901,774**	***34.6%***	**1.11**	**0.5%**

Source: Bureau of Economic Analysis. LQ: Location Quotient

The economic composition in Louisiana is projected to shift toward a larger proportion of statewide employment in services industries, from 66.6 percent in 2014 to 71.1 percent in 2040. Despite the continued shift in economic composition towards service-related industries, the relative concentration of employment in freight-intensive, goods-related industries is projected to continue, as compared with the nation through 2040, see **Table 3-5**.

Table 3-5: Louisiana Forecasted Employment

NAICS	Industry Description	2014			2040			'14-'40 CAAGR
		Emp.	%	LQ	Emp.	%	LQ	
11	Agriculture, Forestry, Fishing/Hunting	20,249	*0.8%*	1.56	26,568	*0.7%*	1.60	2.8%
21	Mining, Quarrying, and Oil and Gas	79,642	*3.0%*	3.70	86,123	*2.3%*	3.31	0.8%
22	Utilities	9,544	*0.4%*	1.11	8,899	*0.2%*	0.98	-0.7%
23	Construction	182,275	*6.9%*	1.36	221,146	*6.0%*	1.21	2.0%
31-33	Manufacturing	146,137	*5.5%*	0.81	132,931	*3.6%*	0.83	-0.9%
42	Wholesale Trade	80,984	*3.0%*	0.87	99,402	*2.7%*	0.84	2.1%
44-45	Retail Trade	273,511	*10.3%*	1.00	362,448	*9.8%*	0.95	2.9%
48-49	Transportation and Warehousing	96,456	*3.6%*	1.12	132,390	*3.6%*	1.13	3.2%
51	Information	29,616	*1.1%*	0.61	35,420	*1.0%*	0.63	1.8%
52	Finance and Insurance	107,265	*4.0%*	0.74	123,842	*3.3%*	0.63	1.4%
53	Real Estate and Rental and Leasing	111,598	*4.2%*	0.92	160,177	*4.3%*	0.93	3.7%
54	Professional, Scientific, Technical	139,420	*5.2%*	0.74	208,814	*5.6%*	0.72	4.1%
55	Management of Enterprises	28,936	*1.1%*	0.90	39,904	*1.1%*	0.82	3.3%
56	Administrative/Waste Management	161,051	*6.1%*	0.94	293,949	*7.9%*	1.02	6.2%
61	Educational Services	52,312	*2.0%*	0.78	85,091	*2.3%*	0.76	5.0%
62	Health Care and Social Assistance	301,190	*11.3%*	0.99	552,737	*14.9%*	1.06	6.3%
71	Arts, Entertainment, and Recreation	51,765	*1.9%*	0.87	80,097	*2.2%*	0.91	4.5%
72	Accommodation and Food Services	202,039	*7.6%*	1.06	314,653	*8.5%*	1.13	4.5%
81	Other Services, Except Government	185,334	*7.0%*	1.19	316,738	*8.5%*	1.31	5.5%
92	Government	401,586	*15.1%*	1.10	427,111	*11.5%*	1.05	0.6%
	Total Non-Farm Employment	**2,660,910**	***100.0%***		**3,708,440**	***100.0%***		**3.4%**
	Subtotal: Freight-Intensive	**888,798**	***33.4%***	**1.10**	**1,069,907**	***28.9%***	**1.06**	**1.9%**

Source: Woods & Poole Economics, Inc.; 2014 Complete Economic and Demographic Data Source (CEDDS)
LQ: Location Quotient

3.1.3 Example Supply Chains

Three product supply chain examples were developed to illustrate how industries and transportation interact to produce goods for consumption. The lumber, natural gas and sugar production examples show the idealized economic and transportation interactions for industries that are important to Louisiana.

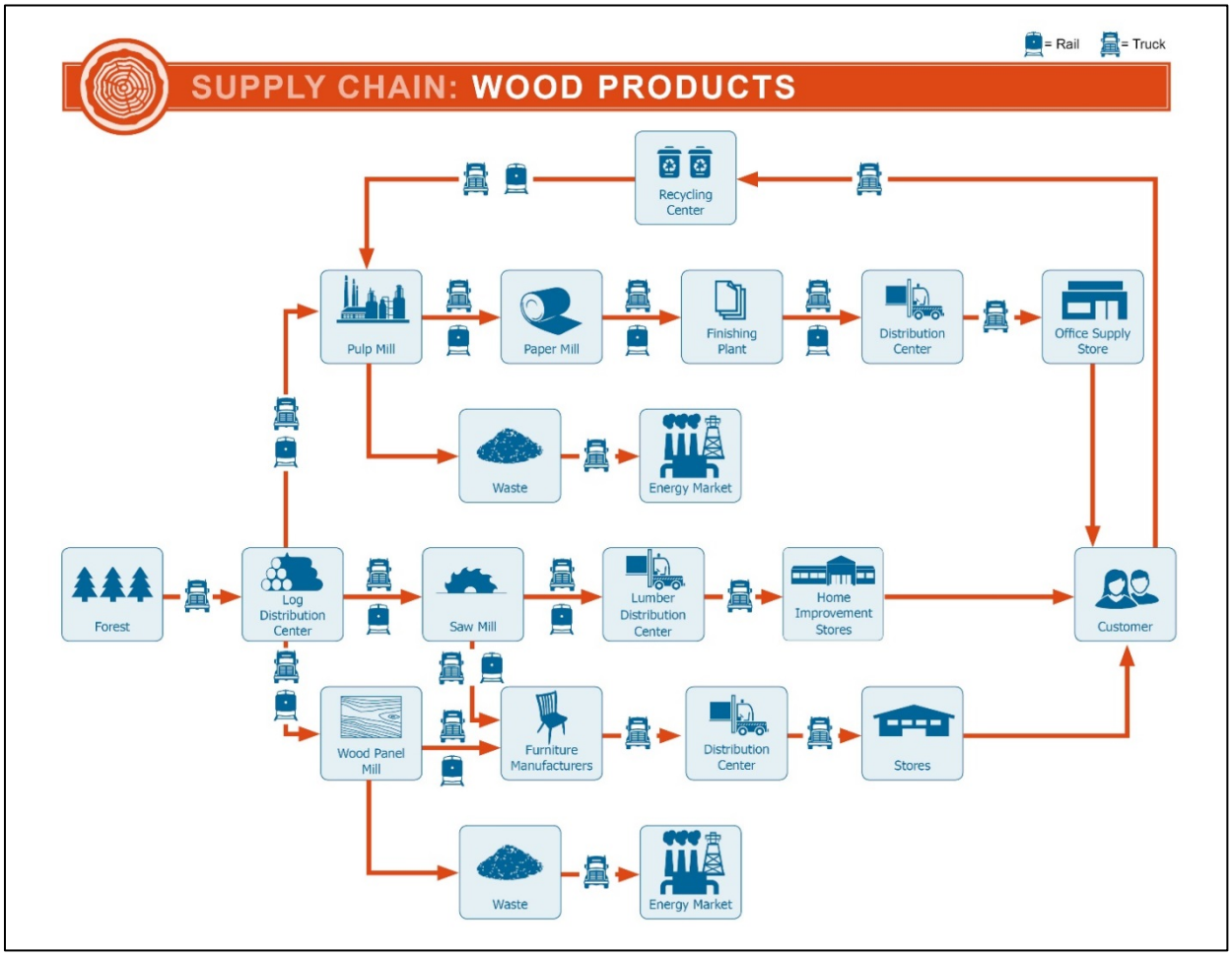
Wood Products

Lumber movements account for over 25 percent of all truck volumes (by weight) across the state. An analysis using TRANSEARCH commodity flow data projects that lumber/wood, and pulp/paper freight volumes will continue to grow, doubling by 2038. This growth will impact Red River, Natchitoches,

Jackson, Washington, and Beauregard Parishes, which produce over 3.5 million tons of paper products annually. Simply, the movement of lumber- and wood-related products will continue to have a significant impact on the Louisiana Freight network for the foreseeable future.

The wood supply chain is complex and truck dependent (see **Figure 3-1**). The supply chain begins with a logging operation where trees are harvested and shipped via truck to an initial distribution center. At this center, logs are classified by size and quality and shipped via truck (and sometimes train) to mills where they are processed into boards or paper pulp. The next step in the supply chain transforms those preliminary manufactured products into furniture, paper, or in the case of commercial-ready lumber, shipped to retailers. Once the finished goods are consumed they often re-enter the supply chain as recycled raw materials.

Figure 3-1: Louisiana Supply Chain: Wood Products



Natural Gas

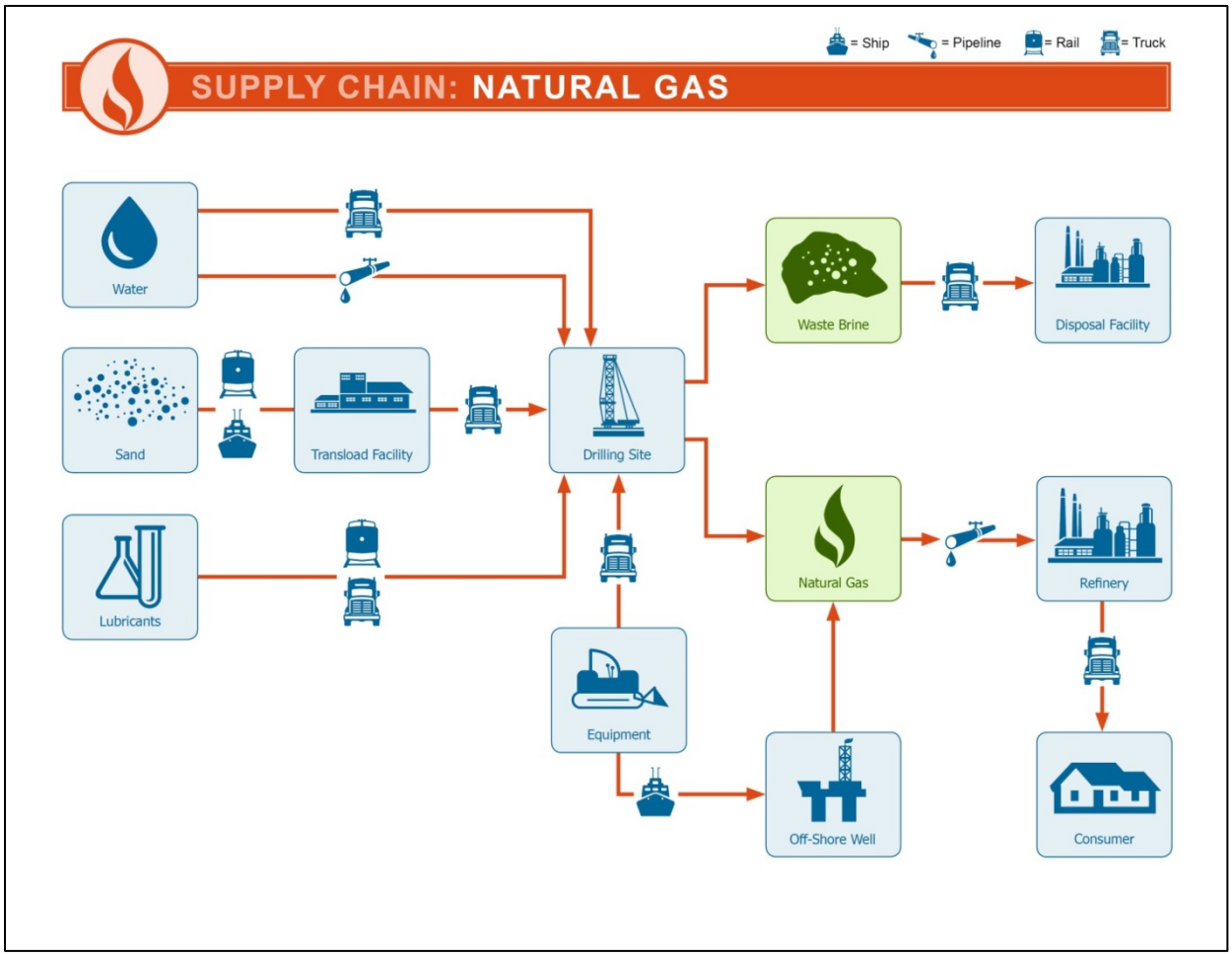
Louisiana's ability to move, process and export natural gas is critical to the nation's energy future. Gas extracted on- and off-shore make Louisiana the third[8] largest natural gas producer in the nation behind Texas and California. The state's three liquefied gas refineries have the capacity to process over 5 million cubic feet per day. Due to the massive volumes of gas shipped from Louisiana, the Henry Hub – a major pipeline junction in Erath, Louisiana where nine interstate and four intrastate pipelines meet, is used by the New York Mercantile Exchange to price natural gas futures.

While the majority of natural gas produced in Louisiana is extracted in the Gulf of Mexico, hydraulic fracturing (or fracking) has emerged as a recent method to extract natural gas land-side. As these drill sites are constructed and brought online, one of most notable changes to the local transportation network is the significant increases in truck volumes. However, trucks are only one part of the multimodal transportation system that is required to extract gas. The raw materials and construction materials, required to extract natural gas from the shale layers, are transported by rail and truck. Similarly, sand is transported in Louisiana by truck, rail and maritime modes. (See **Figure 3-2**)

At the drill site, natural gas is extracted from the ground and used brine water becomes a by-product of the process. The extracted gas is moved to one of the state's three refineries via pipeline. Waste brine that cannot be re-used is shipped via truck to one of the state's designated disposal sites.

[8] *http://www.eia.gov/tools/faqs/faq.cfm?id=46&t=8*

Figure 3-2: Louisiana Supply Chain: Natural Gas



Sugar

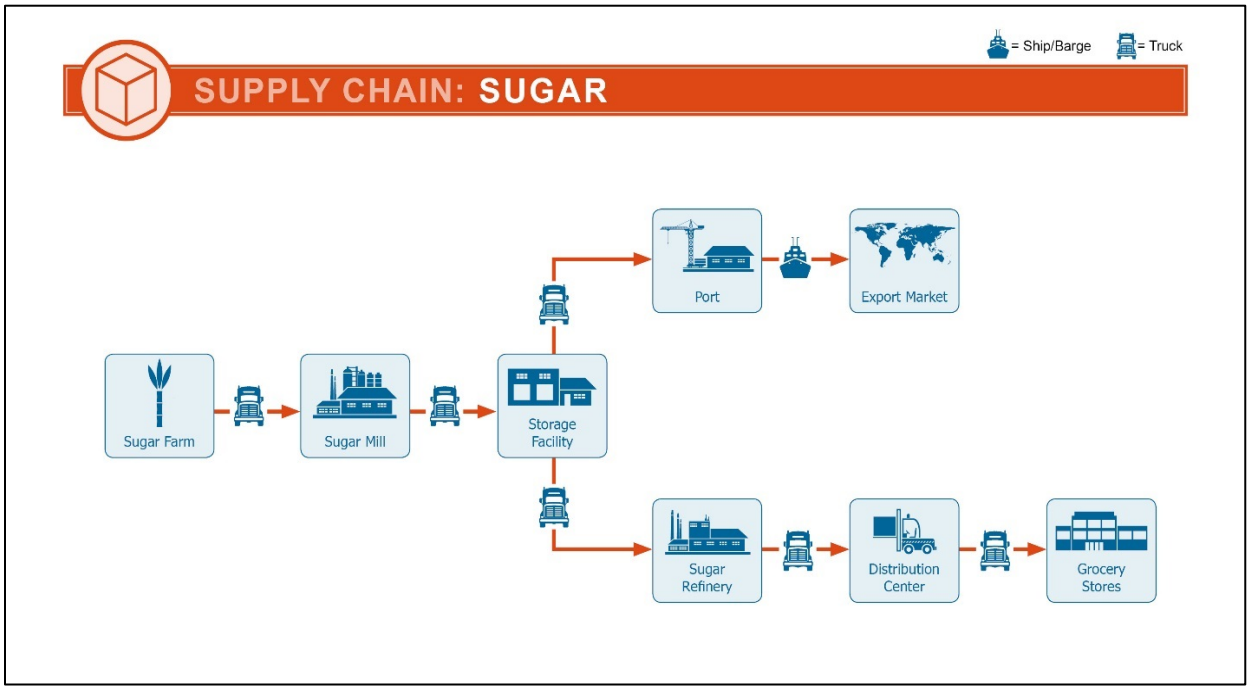
Sugarcane is one of Louisiana's major agricultural products. In fact, Louisiana and Florida produce most of the nation's domestic sugarcane crop. Louisiana's 450 sugar cane farms produce over 13 million tons annually. The sugar cane yield in Louisiana approaches levels seen in tropical sugarcane areas. According to the American Sugar Cane League, the Louisiana sugar industry, with 11 sugar mills[9], generates an overall economic value of $3.5 billion, and employs 17,000 workers[10].

The sugar supply chain is highly truck dependent and seasonal (see **Figure 3-3**). Louisiana sugarcane is harvested from October to December. Harvested sugar cane is de-leafed at the field and then transported by trucks to a sugar mill. At the sugar mill, the sugarcane is processed into raw sugar. The products of the milling process are then stored until they are shipped by truck to a sugar refinery where

[9] *http://www.lsuagcenter.com/en/crops_livestock/crops/sugarcane/Cultural+Practices/History+of+Sugarcane+in+Louisiana.htm*
[10] *http://www.amscl.org/industry-info*

they are processed further into table sugar and other household food items. After the refinery, the goods are packaged and shipped by truck to distribution centers and grocery stores.

Figure 3-3: Louisiana Supply Chain: Sugar



3.1.4 Freight Implications on the State's Economy

In Louisiana and as noted, the economy has a relatively high concentration of industries (as compared with the nation) that are goods-related, especially as measured by monetized economic activity (real GSP). Such relative concentration implies a relatively higher freight activity for the state. According to available economic projections, the economic composition is expected to increasingly shift (following existing historical trends) towards service-related industries; however, the relative concentration of freight-intensive industries is projected to continue.

3.2 Louisiana Supply Chain/Transportation Council

As a low-elevation, southern coastal state, Louisiana is vulnerable to hurricanes and floods. In addition to the risks they present to human life, wind damage and flooding can disrupt key links in freight supply chains, inhibiting commerce, or worse, preventing supplies from reaching populations in times of critical need.

In 2016, Louisiana experienced two 500 to 1,000-year rain storms that were declared federal disasters and flooded 80 percent of the state's parishes. One of the storms forced the closures of important interstate links, including I-10 at the border with Texas, as well as the closures of over 400 state and US highways throughout Louisiana. The storm caused a month-long closure of two Class I railroads, as well as extended closures of the J. Bennett Johnston Red River and Ouachita River Waterways. These floods caused extensive damage to personal property. They also caused long-lasting economic hardships to businesses and industries based in Louisiana who could not receive or ship their goods.

While these types of incidents are become more frequent and more severe, Louisiana is taking steps to understand and address the vulnerabilities in its transportation system that may be exposed by hurricanes and floods. In 2016, the state organized the Louisiana Supply Chain/Transportation Council (SCTC), composed of public and private sector interests, to improve the ability of the roads, waterways, aviation assets, and rail systems to function as an interconnected network under the pressures and disruptions of natural disasters.

The SCTC is now considering its mission and focus, and has before it eight high-priority tasks for potential adoption:

- Identify known single points of failure for all transportation nodes: triggers, impacts, alternatives.
- Identify known single points of failures that have experienced repetitive flooding.
- Identify single points of failure of interdependency infrastructure.
- Identify governing authorities across the state impacting transportation.
- Consolidate all known transportation nodes mapping data.
- Identification of future disruptions.
- Establish on the fly routing during disasters.
- Support all the universities in the state by providing a list of research priorities to enhance resiliency for the transportation sector.

The SCTC will be one of several statewide committees that are involved in anticipating and responding to storm events. In July 2017, it became involved in a pilot project, the Louisiana Resilience Pilot Project (LRPP), to create resiliency strategies for the Vermilion, Lower Ouachita, and Amite regions, which were impacted by recent storm events and whose populations and transportation systems are considered vulnerable to future events.

3.3 Business Opportunity and Economic Development Needs

Some multimodal freight needs in Louisiana are not bottlenecks per se, but they do represent upgrades that might be required to promote economic development in communities or take advantage of a specific opportunity. Such projects and needs are discussed below. A summary of economic opportunities is illustrated on **Figure 3-4**.

Figure 3-4: Transportation-related Economic Opportunities in Louisiana

Source: DOTD

3.3.1 Rail

The 2015 Statewide Transportation Plan identifies megaproject #91, which is a rail rehabilitation and extension with associated roadway improvements on an industrial site in Alexandria that is adjacent to US 165/LA 1 and I-49. These improvements would promote economic development in the area. However, this project has not advanced past the planning stages. It is classified as a Priority C megaproject, meaning that execution is contingent on funds being made available beyond those needed for Priority A and B megaprojects, which themselves are contingent on substantial new funding through the Louisiana Transportation Trust Fund and federal sources.

Caddo-Bossier Port is already served by the UP railroad but would like to gain direct access to the KCS railroad as well to promote cargo development opportunities and provide shippers with additional multimodal options. However, doing so would require KCS acquiring trackage rights over the existing UP line, and the UP is not amenable to providing such access to a competitor.

3.3.2 Aviation

Economic development opportunities at cargo-handling Louisiana airports include:

- Monroe Regional Airport and Acadiana Regional Airport would like to construct rail spurs to promote industrial and freight development.

- Chennault International Airport is looking to improve several aspects of its cargo operations, including:
  - Upgrading to a Category II instrumented landing system to promote development of its cargo operations and support the expected increase in demand from continued oil and gas exploration in the Gulf of Mexico[11].
  - Connecting to a nearby underutilized rail line to create direct rail access to the cargo terminal. The airport is exploring public-private partnership models to accelerate this project.
  - Direct connections from I-10/I-210 to the terminal. (There are currently two access points to the interstate system but they require navigating local surface streets.)
  - Improved hangar facilities for cargo operations.
  - The airport has been assessing cold storage needs to better serve the fresh cut flower industry.

More generally, many airports in the state need additional storage space to process freight. Generally, the main cargo airports – New Orleans, Lafayette, and Shreveport – have the required capacity, but regional airports around the state may not.

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[11] *Due to its importance to the regional energy industry, Chennault is classified as a Part 139 airport, meaning it must meet high standards of safety and security even though it is not a commercial service airport.*

4. FREIGHT POLICIES, STRATEGIES AND INSTITUTIONS

4.1 Freight Policies

The FAST Act contains a number of initiatives and provisions to improve the condition and performance of the national freight network and support investment in freight-related surface transportation projects. **Table 4-1** lists federal freight policies and provisions.

Table 4-1: FAST Act Freight Policy and Provisions

Freight Policy or Provision	Explanation
National Freight Policy	Policy to improve the condition and performance of the national freight network to provide the foundation for the United States to compete in the global economy and achieve goals related to economic competitiveness and efficiency; congestion; productivity; safety, security, and resilience of freight movement; infrastructure condition; use of advanced technology; performance, innovation, competition, and accountability in the operation and maintenance of the network; and environmental impacts.
National Freight Network	Creates a National Multimodal Freight Network (NMFN) which includes a National Freight Network consisting of all Interstate Highways, an additional 41,000 primary network highway miles identified under MAP-21 and other State-identified highway segments.
National Freight Strategic Plan	In 2015, DOT released a draft National Strategic Freight Plan. The Plan highlights key trends and challenges, including congestion, institutional and financial, that need to be addressed to enable economic growth. The Plan describes a range of possible public and private sector actions to improve freight infrastructure and planning processes.
Freight Data, Planning, and Reporting	Directs DOT to develop or improve data and tools to support an outcome-oriented, performance-based approach to evaluating proposed transportation projects. It also directs DOT to consider improvements to existing freight flow data collection.
Freight Conditions and Performance Report	Requires DOT to prepare a biennial report describing the condition and performance of the national freight network.
State Freight Advisory Committees and Freight Plans	Requires DOT to encourage each state to establish a freight advisory committee composed of a representative cross-section of public- and private-sector freight stakeholders. It also requires DOT to encourage each state to develop a comprehensive plan for its immediate and long-range freight-related planning and investment.

Table 4-1 Continued

Freight Policy or Provision	Explanation
Freight Eligibility under Grant and Loan Programs	Below is a list of several federal grant and loan programs that provide funding for eligible freight improvements. • Creates the National Highway Freight Program (NHFP). The NHFP is funded at an average of $1.2 billion per year and is distributed to the States by formula. Also, the Nationally Significant Freight and Highway Projects, a discretionary program, is funded at an average of $900 million per year. Certain non-highway projects may be eligible for funding under either program • *Surface Transportation Program (STP):* Under the FAST Act, the STP is a block grant program, which provides much greater autonomy to states and regional agencies to select and fund projects. There is continued eligibility for truck parking and surface transportation infrastructure improvements in port terminals for direct intermodal interchange, transfer, and port access • *Highway Safety Improvement Program (HSIP):* Offers eligibility for truck parking • *Congestion Mitigation & Air Quality Improvement Program (CMAQ):* Allows use of funds for a project or program to establish electric vehicle charging stations or natural gas vehicle refueling stations • *Projects of National and Regional Significance (PNRS):* Continues program with some changes (currently unfunded) • *Transportation Infrastructure Finance and Innovation Program (TIFIA):* Restricts use of loans for freight rail projects to direct intermodal. There is reduced funding for TIFIA loans under FAST, compared to MAP-21
Jason's Law	Makes construction of safety rest areas, commercial motor vehicle (CMV) parking facilities, electric vehicle and natural gas vehicle infrastructure eligible for federal funding. Also requires DOT to survey states within 18 months of enactment regarding their CMV traffic and capability to provide CMV parking. DOT must periodically update this survey, and must post the results on DOT's website.
Special Permits During Periods of National Emergency	Allows states to issue divisible load permits to overweight trucks exclusively carrying relief supplies for up to 120 days following a Presidential declaration of a major disaster.
Metropolitan and Statewide Planning	Continues ability for freight shippers and providers of freight transportation services to participate in metropolitan and statewide transportation planning processes. Continues requirement that planning processes provide for consideration of projects and strategies to – increase the accessibility and mobility of people and for freight; and enhance the integration and connectivity of the transportation system, across and between modes, for people and freight. Freight plans must be completed and updated at least every 5 years
Performance	Continues requirement for DOT to establish measures for States to use to assess freight movement on the Interstate System. Requires each state to set performance targets in relation to these measures and integrate the targets within its planning processes. States must also report periodically on their progress in relation to the targets and on how they are addressing congestion at freight bottlenecks. The FAST Act also establishes a port performance statistics program

Source: FHWA and American Association of State Highway and Transportation Officials (AASHTO)

4.2 National Freight Strategies

In June 2014, the National Freight Advisory Committee (NFAC or Committee) appointed by the Secretary of Transportation, published its recommendations for the development of the National Freight Strategic Plan (NFSP). The NFSP will implement and advance the National Freight Policy and Goals established under MAP-21. The recommendations are categorized into three elements outlined in MAP-21:

1) **Barriers**: An assessment of statutory, regulatory, technological, institutional, financial, and other barriers to improved freight transportation performance (including opportunities for overcoming the barriers)

2) **Best Practices**: To improve the performance of the national freight network, and

3) **Best Practices**: To mitigate the impacts of freight movement on communities (See **Appendix A** for the full list of recommendations).

4.3 Louisiana Freight Institutions

The statewide institutions that influence the movement of freight in Louisiana are discussed in this section.

4.3.1 Louisiana Department of Transportation and Development

The majority of freight planning at DOTD falls under the Multimodal Planning Division. The division is broken into a number of sections that have impacts on freight, including the Transportation Planning, Aviation, Marine and Rail, and Highway Safety sections. The Multimodal Planning Division also oversees the Aviation Priority Program, and the Port Priority Program. Additional responsibilities related to freight movement are within the Operations Division, including the Bridge Maintenance and Inspections, Intelligent Transportation Systems, and Truck Permits sections. Within the Engineering Division the Bridge Design, Roadway Design, Traffic Engineering and Public Works, and Water Resources sections all influence the movement of freight in Louisiana.

4.3.2 Louisiana Highway Safety Commission

The Louisiana Highway Safety Commission (LHSC) administers the State's highway safety grant program. The goal of the program is to reduce traffic crashes and the resulting deaths, injuries and property damage. LHSC implements projects in priority areas based on crash severity, over-representation, and magnitude of the problem. Factors associated with traffic crashes include conditions of the roadway, environmental conditions (including weather conditions), and driver behavior.

4.3.3 Louisiana Office of Motor Vehicles

The Louisiana Office of Motor Vehicles issues commercial driver's licenses. There are a number of requirements for obtaining a commercial driver's license, including successfully completing a commercial driver's license exam, and passing a physical examination.

4.3.4 Louisiana Economic Development

Louisiana Economic Development (LED) mission is to strengthen Louisiana's economy and business environment. LED has targeted 9 key industries for growth: aerospace, agribusiness, automotive, energy, entertainment, manufacturing, process industries, software development, and water management. Each of these industries relies on the freight transportation system. The LED recognizes

that transportation and logistics plays a large role in the Louisiana economy and in supporting the nine key industries.

4.3.5 Metropolitan Planning Organizations

Federal law requires that a Metropolitan Planning Organization (MPO) be designated for each urban area with a population of 50,000 or more. Louisiana's eleven MPOs receive federal funding for transportation planning activities. MPOs develop financially constrained long-range multimodal plans and short-term transportation improvement programs in coordination with the DOTD. The long-range plans identify transportation improvements and services within the metropolitan area boundaries for the next 20 to 25 years.

FAST Act requires each MPO to set performance targets in relation to the freight measures, integrate these targets within their planning processes, and report periodically on their progress in relation to these targets. [§1201; 23 USC 134(h)(2), 134(i)(2)(C)]

4.3.6 Parishes/Municipalities

In Louisiana, there are 64 parishes and 303 municipalities which are responsible for building, operating and maintaining transportation infrastructure including roads, bridges, and bicycle and pedestrian pathways and maintenance equipment and facilities.

4.3.7 Airports

The State's airport system consists of 69 landing facilities, including seven commercial service airports, 61 general aviation airports, and one heliport[12]. The seven commercial service airports in Louisiana include Alexandria International, Baton Rouge Metropolitan, Lafayette Regional, Lake Charles Regional, Monroe Regional, Louis Armstrong New Orleans International, and Shreveport Regional. Several of these airport authorities actively support air cargo freight movement by developing air cargo facilities and other freight-related infrastructure. The Aviation Trust Fund and landing fees at individual airports provide the majority of funding for airport freight improvements.

4.3.8 Port Authorities

There are 40 port authorities in Louisiana that were established by enactment or grants of authority by the state legislature and most are financially self-supporting. These governmental or quasi-governmental authorities serve the public interest of a state, region or locality. In addition to operating ports and other transportation infrastructure, port authorities have the power to set fees, levy taxes, enact eminent domain, and operate shipping terminals, airports, and railroads.

4.3.9 Louisiana Department of Natural Resources

The Louisiana Department of Natural Resources (DNR) Pipeline Division regulates the use, end-use, conservation, and transport of intrastate natural gas; regulates carbon dioxide pipelines and compressed natural gas fueling facilities; and enforces the Coastal Management Division's rules and regulations pertaining to the construction and related activities of pipelines in the Louisiana coastal zone. They are responsible for implementing a comprehensive pipeline safety inspection and

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[12] *The system does not include the New Orleans Downtown Heliport because it is not an airport.*

enforcement program for both intrastate natural gas and hazardous liquids pipelines, and they serve as a clearinghouse for information regarding the availability of natural gas. The Division operates the Pipeline Safety Program and Pipeline Operations Program.

4.4 Funding Programs for Freight-Related Projects

4.4.1 Key Federal Freight Funding and Financing Provisions

Various federal grant/loan opportunities are available for freight-related projects and each of the programs has its own unique requirements. A majority of the funding for freight-related improvements is administered through the USDOT, with additional funding from non-USDOT sources. The federal transportation infrastructure funding and financing programs are discussed in this section.

Between 2012 and 2014 under MAP-21, the DOTD has received approximately $680 million per year for all federal highway programs, supported by the 18.4 cents per gallon federal fuel tax.

National Highway Performance Program

The National Highway Performance Program (NHPP) is funded at an average of $1.2 billion per year and is distributed to the states by formula. Also, the Nationally Significant Freight and Highway Projects, a discretionary program, is funded at an average of $900 million per year. Certain non-highway projects may be eligible for funding under either program.

Infrastructure for Rebuilding America (INFRA) Grants:

This competitive grant program advances and continues the Fostering Advancements in Shipping and Transportation for Long-term Achievement of National Efficiencies (FASTLANE) grant program established in 2015. INFRA provides dedicated, discretionary Federal financial assistance for highway and freight projects of national or regional significance. The FAST Act authorizes the INFRA program at $4.5 billion for fiscal years 2016 through 2020. These grants are available to states, MPOs, localities, political subdivisions of state or local governments, special purpose districts or public authorities with a transportation function, Federal land management agencies, tribal governments, and multi-state or multi-jurisdictional groups of public entities. Awards under the INFRA program are made to both large and small projects. For a large project, the INFRA grant must be at least $25 million. For a small project, the grant must be at least $5 million. For each fiscal year of INFRA funds, 10% of available funds are reserved for small projects.

Surface Transportation Program (STP)

Under the FAST Act, the STP is a block grant program that provides much greater autonomy to states and regional agencies to select and fund projects. There is continued eligibility for truck parking and surface transportation infrastructure improvements in port terminals for direct intermodal interchange, transfer, and port access.

Congestion Mitigation and Air Quality Program

The CMAQ program is continued in FAST Act to provide a flexible funding source to state and local governments for transportation projects and programs to help meet the requirements of the Clean Air

Act.[13] CMAQ money supports transportation projects that reduce mobile source emissions in areas designated by the U.S. Environmental Protection Agency (EPA) as nonattainment or maintenance of national ambient air quality standards. Eligible activities include those related to rail intermodal freight transportation improvements. To be eligible for funding, the project must reduce emissions of criteria pollutants[14] for which the area is in non-attainment. CMAQ funding is administered jointly by the FHWA and FTA and is allocated among the states based on the severity of their air quality status.

Highway Safety Improvement Program

The Highway Safety Improvement Program (HSIP) supports projects that improve the safety of road infrastructure by adding capacity, improving alignment or operations, such as intersections, curves or making road improvements such as signing, pavement markings or adding rumble strips.

The Transportation Infrastructure Finance and Innovation Act

The Transportation Infrastructure Finance and Innovation Act (TIFIA) program provides federal credit assistance in the form of direct loans, loan guarantees, and standby lines of credit to finance surface transportation projects of national and regional significance. The goal of TIFIA financing is to leverage federal resources and stimulate private capital investment in transportation infrastructure by providing credit assistance in the form of direct loans, loan guarantees, and standby lines of credit to projects of national or regional significance. TIFIA financing is available for large-scale public or private transportation projects. The program is aimed at large projects with a minimum value of approximately $50 million. The maximum TIFIA-financed portion is 33 percent and is administered by the USDOT's TIFIA Joint Program Office.

Railway-Highways Crossing (Section 130) Program

Funds to improve rail-highway crossings are set-aside from the federal HSIP apportionment. The program provides funds for the elimination of hazards at railway-highway crossings and is apportioned to states by formula.[15] In addition to the crossing program, the DOTD has a rail grade separation program.

Federal Rail Safety Improvement Act of 2008

This Act primarily addresses rail safety through regulations; it also authorizes grants for investing in rail technology, railroad safety infrastructure, rail grade crossing improvements, and education, subject to annual appropriations. Provisions under the Act are administered by the Federal Railroad Administration (FRA).

Rail Line Relocation and Improvement Capital Grant Program

Under this program, a state (or political subdivision such as a parish) is eligible for a grant from FRA for any construction project that improves the route or structure of a rail line and involves a lateral or vertical relocation of a portion of rail line, or mitigates the adverse effects of rail traffic on safety, motor vehicle traffic flow, community quality of life, or economic development.

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[13] *Ibid*
[14] *The criteria pollutants are nitrogen dioxide, lead, carbon monoxide, ozone, particulate matter and sulfur dioxide*
[15] *U.S. Department of Transportation, FHWA, retrieved August 14, 2014 from http://safety.fhwa.dot.gov/xings/*

Railroad Rehabilitation and Improvement Financing Program

The Railroad Rehabilitation and Improvement Financing (RRIF) program provides direct federal loans and loan guarantees to finance the development of railroad infrastructure[16]. Under this program, established in 1998, the FRA provides up to $35 billion in direct loans and loan guarantees, with $7 billion reserved for Class I railroad projects. The loans can be used to refinance outstanding infrastructure debt. The program also helps to finance project investments directly, up to the total cost of the project. State and local governments, government-sponsored authorities, corporations, railroads, and others can participate in the program.

Transportation Investment Generating Economic Recovery Discretionary Grants

The Transportation Investment Generating Economic Recovery (TIGER) Discretionary Grant program provides a unique opportunity for USDOT to invest in road, rail, transit and port projects that have the potential to achieve critical national objectives. Since 2009, Congress has dedicated more than $4.1 billion for six rounds to fund projects that have a significant impact on the nation, a region or a metropolitan area.[17]

U.S. Army Corps of Engineers Harbor Maintenance Trust Fund

The U.S. Army Corps of Engineers (USACE) is responsible for maintaining federal navigation channels. Under the Harbor Maintenance Trust Fund (HMTF), the principal legislative vehicle for guiding the USACE Civil Works Program under the 2014 Water Resources Development Act (WRDA), expenditures will increase each year until 2025, when 100 percent of available funds will be directed towards operations and maintenance activities. The Harbor Maintenance Trust Fund is funded by a harbor maintenance tax (HMT) on imported and domestic waterborne cargo and cruise passengers. The HMTF is used to cover the USACE's cost of dredging channels, maintaining jetties and breakwaters, and operating locks along the coasts and in the Great Lakes. The HMTF may be drawn on only with an appropriation by Congress.

Inland Waterways Users Trust Fund for Locks and Dams

The Inland Waterways Fuel Tax and Trust Fund were established by the Water Resources Development Act of 1986. The Act established a Federal marine fuel tax of $0.20 per gallon to support 50 percent of the cost of inland waterway infrastructure development and rehabilitation. The tax generates approximately $85 million annually. The Trust Fund balance began to decline in 2003 when increasing amounts were used to modernize the inland waterway system. This continued until 2009 when the Trust Fund balance was exhausted, limiting the amount of spending to the annual tax revenues available. There is now a substantial backlog of authorized projects, and the limited funding available has been spread over a list of projects, which has extended the construction time for each project. The 2014 WRRDA Act directs the Secretary of the Army to conduct a study to report on potential revenue sources for the Inland Waterway Trust Fund. With the passing of the Able Act, as of April 1, 2015 the Inland Waterway Trust Fund tax was increased to $0.29 per gallon.

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[16] *U.S. Department of Transportation, FRA, retrieved August 14, 2014 from http://www.fra.dot.gov/Page/P0128*
[17] *U.S. Department of Transportation, retrieved 8/14/14 from http://www.dot.gov/tiger*

FAA Airport Improvement Program

The Airport Improvement Program (AIP) is administered by the FAA and provides grants for planning and developing public-use airports that are included in the National Plan of Integrated Airport Systems (NPIAS). For large and medium primary hub airports, the grant covers 75 percent of eligible costs (or 80 percent for noise program implementation). For small primary, reliever, and general aviation airports, the grant covers a range of 90 to 95 percent of eligible costs, based on statutory requirements. Eligible projects include improvements related to enhancing airport safety, capacity, security, and environmental concerns. In general, sponsors can use AIP funds on most airfield capital improvements or repairs and, in some specific situations, for terminals, hangars, and non-aviation development.

Department of Commerce

The Department of Commerce (DOC) administers federal funding for grants and cooperative agreements in the form of discretionary and nondiscretionary funds. The grants most germane to freight are administered by the Economic Development Administration (EDA), The EDA provides public works funds for distressed communities to revitalize, expand, and upgrade their physical infrastructure to attract new industry, encourage business expansion, diversify local economies, and generate or retain long-term, private sector jobs, and investment.[18]

4.4.2 State Transportation Funding Programs/Sources

The following subsections describe state based transportation funding programs and sources available for transportation projects.

State Motor Fuel Tax

Louisiana motorists pay a 16-cent-per-gallon tax on motor fuel (gasoline and diesel fuel). Since 2010, the revenue from this tax has yielded approximately $460 to $470 million per year. These funds are deposited in the Louisiana Transportation Trust Fund (TTF), which supports the DOTD's operations, DOTD's Port Priority Program, the Parish Transportation Fund, flood control projects, and provides matches for the Federal Highway Program. In 2015, Louisiana's motor fuel (gasoline and diesel) tax, inclusive of the 4-cent-per-gallon TIMED tax, ranked 41st, one of the lowest among the 50 states and the District of Columbia.

In 1989, the Louisiana Legislature imposed an additional 4-cent-per-gallon gasoline tax ($115-$118 million per year), for a total of 20 cents per gallon, with the provision that revenues from this tax be dedicated to the completion of 16 major projects in the state, and prohibiting the use of these funds for any other project. The TIMED program was completed in July 2013, with the exception of the Florida Avenue Bridge and LA 3241 from I-12 to Bush projects. For the next 30 years, the revenues from the 4-cent-per-gallon gasoline tax are dedicated to retire the bonds issued to complete the program.

Registration Fees

Louisiana's private automobile and truck registration fees are among the lowest in the country. Automobile registration fees for typical vehicles range from $10 to $82 based on the selling price of the vehicle. Single-unit truck registration fees for typical vehicles range from $28 to $563 depending on

[18] *http://www.eda.gov/programs.htm*

gross vehicle weight. The private automobile license fees generate approximately $48.3 million annually. This revenue is deposited in the State's Transportation Trust Fund (TTF). Truck registration fees are estimated to generate approximately $49.5 million annually, with revenue being deposited in the State Highway Improvement Fund (SHIF). Based on the most recent projections from the state's Revenue Estimating Conference, revenue from both sources is estimated to remain flat through state fiscal year 2018-19. Debt service on SHIF bonds is $23 million per year until 2034.

Unclaimed Property

Louisiana's Department of Treasury allocates $15 million annually from the Unclaimed Property Fund, to DOTD for the purposes of completion of the northern and southern segments of the I-49 project.[19] These funds are divided equally between the two segments and are used to support bonding of their design and construction costs.

Louisiana Capital Outlay Program

The Capital Outlay Program (Bond Program) provides a source of funding for public improvement projects not eligible for funding through any of the dedicated funding programs. The funds are provided through the sale of State General Obligation Bonds and can be used for acquiring land, buildings, equipment or other properties, or for the preservation or development of permanent improvements. The program requires that projects be submitted by a department secretary. However, local officials from political subdivisions also may make requests through their senator or representative. Projects then compete through the legislative process, and successful projects are grouped into various funding priorities and included in the approved Capital Outlay Bill. Funding for a specific project does not become available until the bonds for that project are sold, or an advance cash line-of-credit is approved by the State Bond Commission.

4.5 Stakeholder Engagement

Stakeholder engagement for the Louisiana Freight Mobility Plan included a variety of outreach activities as described below.

4.5.1 Freight Advisory Committee

MAP-21 encourages each state to establish a freight advisory committee composed of a representative cross-section of public- and private-sector freight stakeholders. DOTD established a Louisiana freight advisory committee as part of the Freight Plan development process. Members include private-sector business leaders; modal representatives (including port authorities); and representatives of regional, state, and federal agencies (**Table 4-2**). The committee was established to help identify issues and important needs, and to serve as a sounding board for the Plan's findings and recommendations, as they were developed.

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[19] *The northern portion of future I-49 extends from Shreveport to the Arkansas state line, roughly parallel to U.S.US 71 on the west northward from I-220. The southern portion of future I-49 extends from Lafayette to New Orleans roughly following the path of the current U.S.US 90.*

Table 4-2: Freight Advisory Committee Membership

Name	Organization
Connie Betts, Chair	Louisiana Department of Transportation and Development
Dennis Decker, Chair (former)	Louisiana Department of Transportation and Development
Captain Mark Morrison	Louisiana State Police
Anthony Bodin	Louisiana Economic Development
Sheba Person-Whitley	Louisiana Economic Development
Joe Accardo, Jr. and Matthew Gresham	Ports Association of Louisiana
Sean Duffy, Sr.	Big River Coalition
Cherrie Felder	Gulf Intracoastal Canal Association
Mark Wright	American Waterways Operators
Yvonne Chenevert	Louisiana Airport Managers and Associates
Carmack Blackmon	Louisiana Railroads Association
Jeff Davis	New Orleans Public Belt Railroad
Cathy Gautreaux	Louisiana Motor Transport Association, Inc.
Glen Guillot	Southeastern Motor Freight
Donald Briggs	Louisiana Oil and Gas Association
Joshua Manning	Louisiana Planning Council
Kristiann App	World Trade Center of New Orleans Transportation Committee
Bruce Lambert, ex-officio	Institute for Trade and Transportation Studies
Bill Norris, ex-officio	Federal Motor Carrier Safety Administration
Brandon Buckner and Carlos McCloud, ex-officio	Federal Highway Administration

The committee's specific role and duties included:

- Assistance in identifying key freight system trends, needs, and issues
- Assistance in identifying the role of freight in the state's economy
- Serving as reality/political feasibility check for proposed strategies/recommendations
- Providing insight and guidance regarding next steps, and
- Continuing to serve after plan adoption

The committee met twice during the course of the Freight Plan's development. The first meeting focused on a discussion of specific freight-related issues and the investments and/or policies needed to address them. The second meeting focused on the prioritized freight projects and policies, their potential costs and benefits, and a discussion of short term and long-term options.

The committee was formed as a permanent advisory body to support DOTD's freight-related planning and investment decisions, not only during the development of the Freight Plan, but well beyond. This will provide consistency to ensure a long-term and sustainable Freight Plan. The Plan is a starting point for a continuing discussion about improving statewide goods movement, both with regional and local decision-makers and the private sector.

4.5.2 Port Survey

DOTD conducted an online survey to understand the factors and issues affecting ports and waterways freight transport, to understand how they are being addressed, and to anticipate future needs. Survey recipients included representatives of the maritime freight industry as well as directors of ports, commissions, and associations related to the industry. Out of 38 recipients, 26 responses were received.

4.6 Decision Making Process

Investments potentially benefiting freight were identified and prioritized as part of the Plan's development. This process has created a roster of choices for decision-makers as they develop future capital programs and initiate special projects. The prioritization is intended to identify the projects that: 1) have the largest impact on freight needs and 2) best address the goals and objectives of the Freight Plan. Prioritization is also intended to complement the formal and informal project selection processes that are already in place. An initial set of candidate projects for prioritization was drawn from:

- The Statewide Transportation Improvement Program
- Statewide modal plans
- Statewide Transportation Plan
- Metropolitan Planning Organization plans
- Freight Advisory Committee input
- Interviews and surveys
- Analysis of existing conditions and freight bottlenecks

The 'long' list of projects was then evaluated for their freight relevance and importance. The purpose and process for evaluating the projects is described below.

4.6.1 Defining Freight Projects

Three categories are used to identify a project's freight relevance. These definitions help initially identify how a project may impact the freight system. A potential freight project should fit into one of the following categories:

- ***Freight focused*** – The primary purpose of the project is to address a specific freight transportation need

- ***Freight related*** – The primary purpose of the project is to address multiple transportation concerns, of which freight is one element

- ***Freight impacted*** – The primary purpose of the project is to address general transportation needs; however, freight mobility may be positively affected

After refining the 'long' list of projects into the three freight-related categories described above, the projects are then overlaid on the freight corridor tiers, described in **Section 4.7,** and developed as part of this Plan. The third step is to ensure that the project is a capital improvement that improves the mobility of freight by understanding the benefit the project will add. The fourth step is to ensure that the project improvement is consistent with the goals within the FAST Act, the Louisiana STP and Freight Mobility Plan (see Section 2).

Eligible projects that improve the movement of freight under the FAST Act "may include, but are not limited to":

- Construction, reconstruction, rehabilitation, and operational improvements directly relating to improving freight movement
- Intelligent transportation systems and other technology to improve the flow of freight
- Efforts to reduce the environmental impacts of freight movement on the primary freight network
- Railway-highway grade separation
- Geometric improvements to interchanges and ramps
- Truck-only lanes
- Climbing and runaway truck lanes
- Truck parking facilities eligible for funding under section 1401
- Real-time traffic, truck parking, roadway condition, and multimodal transportation information systems
- Improvements to freight intermodal connectors, and
- Improvements to truck bottlenecks

There are additional investments that the DOTD may focus on to address the Freight Plan's goals. These include rail crossing improvements, on-port efficiency improvements, and support for short-line railroad improvements.

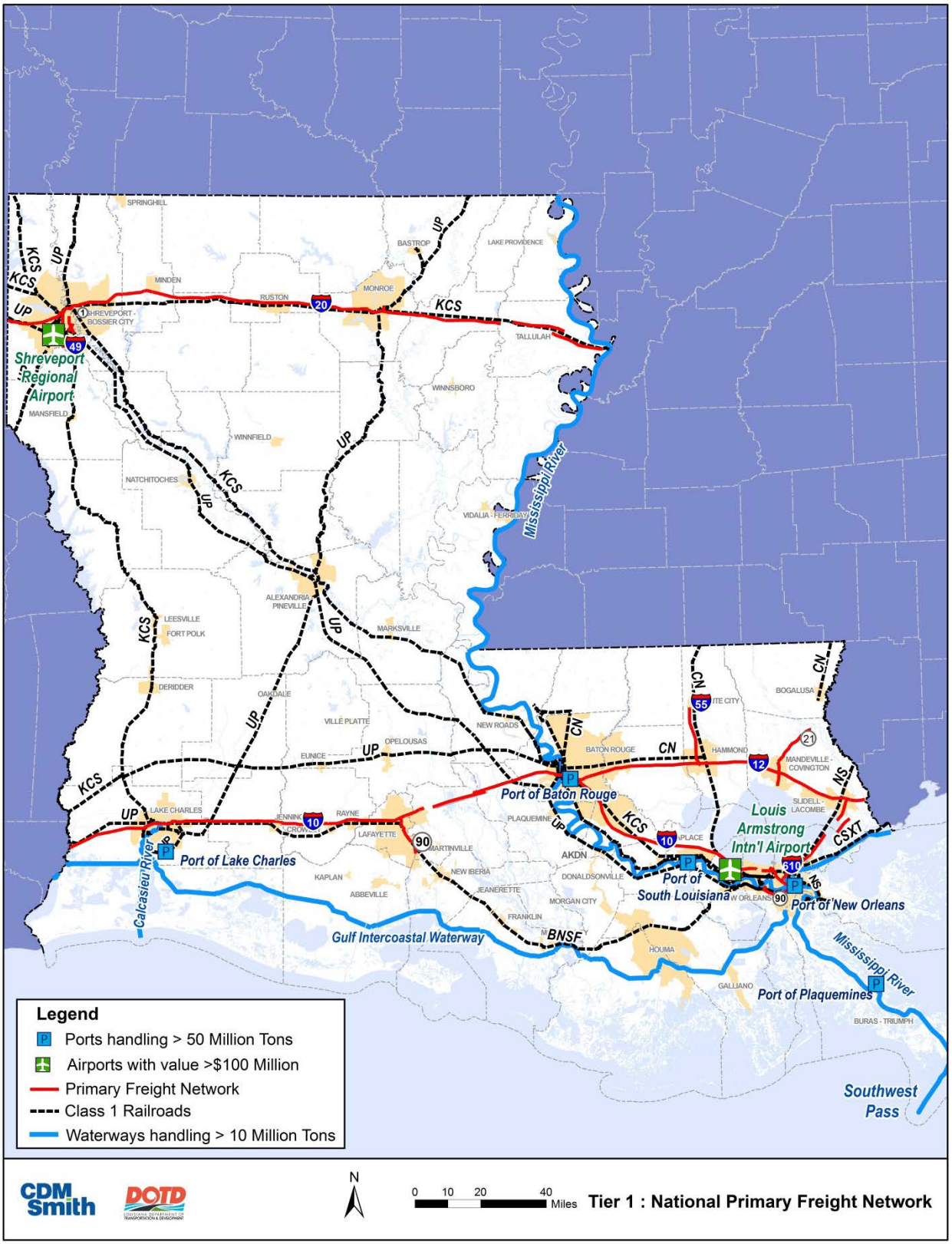
4.7 Louisiana State Freight Transportation Network

Freight often travels long distances from the point of production to the consumer, along many routes and, typically, via several modes. As part of the Louisiana STP planning process, corridors of statewide significance were identified that are appropriate for a description and analysis of the types of long distance movements which are typical of freight and are critical to the mobility needs of shippers.

The FAST Act creates a National Multimodal Freight Network (NMFN) which includes a National Freight Network consisting of all Interstate Highways, an additional 41,000 primary network highway miles identified under MAP-21 and other State-identified highway segments. In order to assess the current and future state of goods movement within Louisiana and to complement the national network, it has been necessary to identify the elements of the state's multimodal network that serve an important freight function. The identification of freight focused corridors allows for the analysis of major shipping routes and for the prioritization and selection of capital improvements of benefit to freight movements. This ultimately benefits shippers, receivers, and the overall economy of the state. In addition, it is helpful to distinguish among corridors that have more of a national and regional freight-carrying function and those that have more of a local-regional function. Such a distinction allows the DOTD to assess the needs of each corridor and determine the best return on investment given the impact to shipments and local/regional needs. "Tiering" the corridors allows for this high-level evaluation and provides focus for investment decisions.

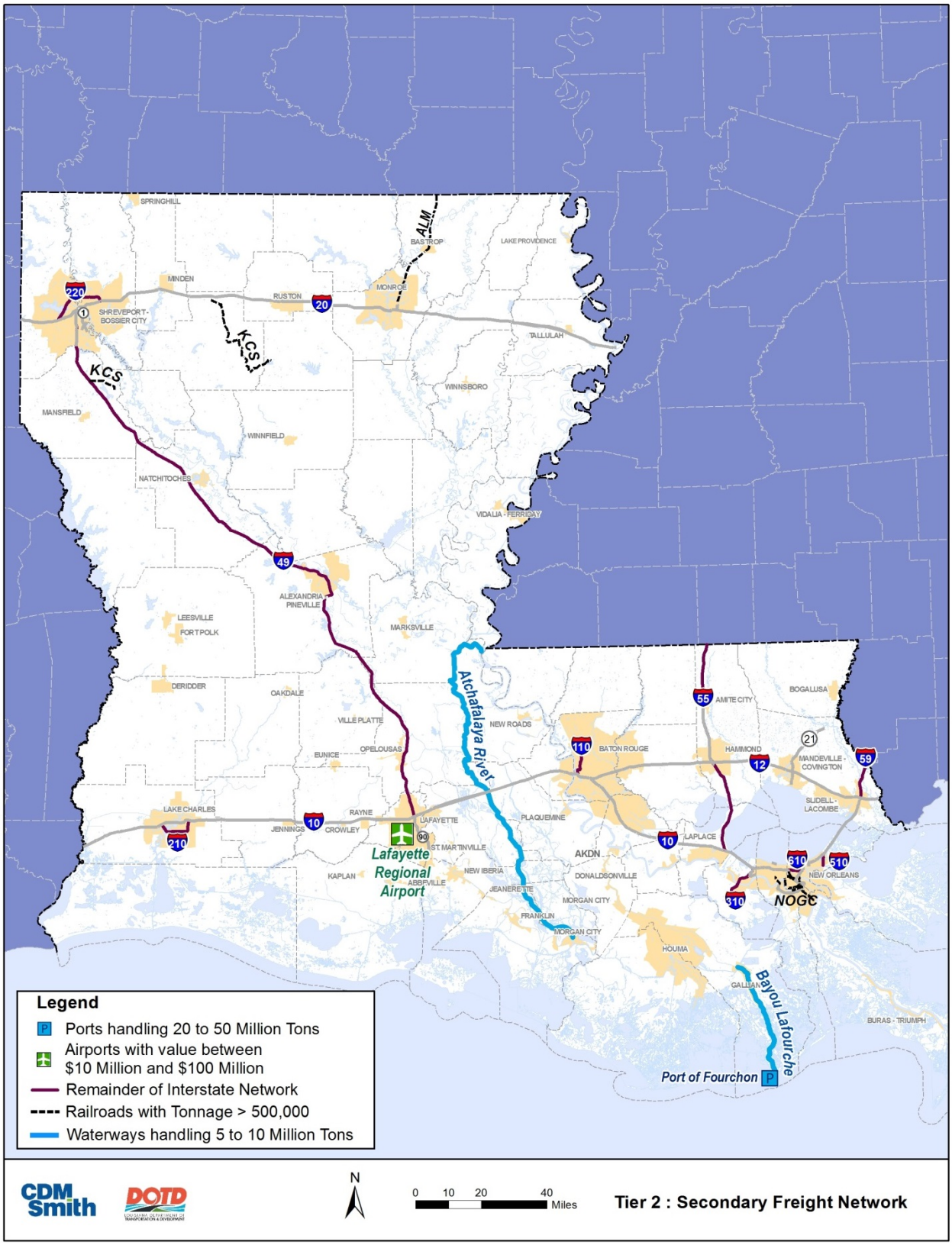
As part of this effort the DOTD has identified four network tiers (or levels) that identify transportation facilities that carry freight. A description of each tier follows. **Figure 4-1** through **Figure 4-3** illustrate Tiers 1 through 3.

Figure 4-1: Tier 1 Freight Corridors in Louisiana



Source: DOTD

Figure 4-2: Tier 2 Freight Corridors in Louisiana



Source: DOTD

Figure 4-3: Tier 3 Freight Corridors in Louisiana

Source: DOTD

4.7.1 Tier 1: National Primary Freight Network

The PFN has been established in draft by FHWA and comments by the DOTD have been submitted. The resulting highway network is the major input for the proposed Tier 1 corridors. FHWA identified approximately 603 miles of roadways to include in the PFN with DOTD seeking to add an additional 47.5 miles to close the gaps identified. The factors considered by FHWA for defining the Tier 1 highway network include:

- Origins and destinations of freight movement in the U.S.
- Total freight tonnage and value of freight moved by highways
- Percentage of annual average daily truck traffic in the annual average daily traffic on principal arterials
- Annual average daily truck traffic on principal arterials
- Land and maritime ports of entry
- Access to energy exploration, development, installation, or production areas
- Population centers, and
- Network connectivity

In addition to the factors considered by the FHWA, the DOTD included the following additional criteria for other modes included in Tier 1 corridors:

- All Class I Railroads
- Airports with greater than $100 million in value annually
- Waterways greater than 10 million gross tons annually and/or 1,000 lockages annually, and
- Port terminals greater than 50 million short tons annually

4.7.2 Tier 2: Remainder of the Interstates

There is only one criterion for Tier 2 corridors highways and that is that they follow the remainder of the Interstate system which has not been identified within the Primary Freight Network. In addition, Tier 2 corridors include the following criteria for other modes:

- Railroads not included in the Tier 1 that have greater than 500 thousand gross tons per mile annually
- Airports not included in Tier 1 that have greater than $10 million in value annually
- Waterways not included in Tier 1 that have greater than 5 million gross tons annually, and
- Port terminals not included in Tier 1 that have between 20 and 50 million short tons annually

4.7.3 Tier 3: Freight Corridors

Tier 3 freight corridors include principal transportation facilities that are important to the movement of freight in Louisiana. The Tier 3 corridors accommodate significant truck traffic and can provide access to energy exploration, development, installation, or production areas. For all modes, Tier 3 facilities may connect with the PFN (Tier 1) or Interstate System (Tier 2) and meet one of the following criteria:

- Rural principal arterials not included in Tier 1 and Tier 2 that have greater than 25% ADTT
- Provide access to energy exploration, development, installation, or production areas, or connect the PFN (Tier 1), or Interstate System (Tier 2) that accommodate 50,000 20-foot equivalent units per year; or 500,000 tons per year of bulk commodities

- Railroads not included in the Tier 1 or Tier 2 that are active
- Airports not included in Tier 1 or Tier 2 that have commercial service
- Waterways not included in Tier 1 or Tier 2 that have >1 million gross tons annually
- Port terminals not included in Tier 1 or Tier 2 that have between 2 and 20 million short tons annually

4.7.4 Tier 4: Freight Connectors

Tier 4 consists of the intermodal and roadway facilities that connect urban areas necessary for the movement of freight in urban settings. The criteria to be used for the freight connectors should be more qualitative in nature to identify those critical links between facilities that may not have a large amount of freight, but have a large impact on the connectivity of the system. Possible criteria include:

- Corridors that serve several freight-related businesses that are not included in Tiers 1, 2 or 3
- Links between the system & primary freight generator (connectors to corridors that serve freight)

This tier is fluid and the assets have not been specifically defined within the Freight Mobility Plan. In addition, those formal connectors from the FHWA intermodal connector program should be included if they have not been included based on the criteria of the first three tiers.

4.8 Prioritization Process

As available funding for transportation becomes more constrained, decision-makers need better information to help make the most strategic investment choices. Project prioritization provides a data-informed approach to evaluating competing needs and conditions in order to identify transportation investments that position Louisiana to meet current and future freight needs. The prioritization process incorporates all transportation modes and considers land use, economic development, safety, and economic impacts. The prioritization process includes four steps:

- **Step 1** – Evaluate a list of potential projects
- **Step 2** – Perform a gap analysis to identify projects that were missing from the initial list of potential investments
- **Step 3** – Define prioritization factors for each mode
- **Step 4** – Analyze each project on the final list and produce a summary assessment

4.8.1 The Prioritization Framework

Once the list of projects is compiled, prioritization criteria and factors can be used to evaluate and prioritize them. The prioritization framework is intended to guide future investments and the state's investment strategy. Funding availability, environmental restrictions, political considerations, or other factors may have an effect on the State's project rankings, ultimately. If the FHWA or the Louisiana DOTD establishes a funded freight program, the DOTD can use the prioritization framework to select projects. **Table 4-3** lists the freight project prioritization criteria and factors.

Table 4-3: Freight Project Prioritization Framework

Goal	Project Prioritization	Criteria	Factors
A. Economic Competitiveness and Efficiency *Improve the freight transportation system for better economic efficiency, productivity, and competitiveness*	• Is on the defined tiered network • Improves access to/from existing or developing freight hubs • Provides access to energy areas • Preserves freight reliant jobs • Improves freight network access • Improves access to freight generators • Improves access among two or more modes • Supports retention or expansion of business • Supports or expands freight related land use • Improves port or waterway facilities for increased throughput or larger vessels	**Freight Impacted** **Freight Related** **Freight Focused**	**Does not improve** **Somewhat improves** **Improves** **Significantly improves** **Greatly improves**
B. Safety & Security *Improve the safety, security, and resilience of the freight transportation system*	• Reduces number of weight restricted bridges • Improves geometric conditions • Improves high truck crash locations • Improves at-grade crossings • Improves truck parking availability • Improves safety/security at facilities (parking, intermodal, etc.) • Improves freight incident response times • Educates the public about freight system safety and security issues	**Freight Impacted** **Freight Related** **Freight Focused**	**Does not improve** **Somewhat improves** **Improves** **Significantly improves** **Greatly improves**
C. Infrastructure Preservation and Maintenance *Improve the state of good repair of the freight transportation system*	• Improves or maintains existing pavement to a state of good repair • Improves structurally deficient bridges • Improves rail lines to increase allowable speeds/capacity • Maintains appropriate waterway/port depths	**Freight Impacted** **Freight Related** **Freight Focused**	**Does not improve** **Somewhat improves** **Improves** **Significantly improves** **Greatly improves**

Table 4-3 Continued

Goal	Project Prioritization	Criteria	Factors
D. Environmental Stewardship *Reduce adverse environmental and community impacts of the freight system*	• Reduces air emissions • Reduces impact to wetlands and water quality • Reduces energy consumption • Reduces other adverse residential and community impacts • Separates freight operations from community activities	**Freight Impacted** **Freight Related** **Freight Focused**	**Does not reduce** **Somewhat reduces** **Reduces** **Significantly reduces** **Greatly reduces**
E. Performance & Accountability *Use advanced technology, performance management, innovation, competition, and accountability to assist with congestion management, operations, and maintenance of the freight transportation system*	• Uses ITS technology to improve system operations • Addresses demands of changing distribution and supply chain practices • Addresses freight bottlenecks • Improves system capacity and/or freight operations	**Freight Impacted** **Freight Related** **Freight Focused**	**Does not assist** **Somewhat assists** **Assists** **Significantly assists** **Greatly assists**

5. LOUISIANA FREIGHT TRANSPORTATION ASSETS

The following transportation infrastructure assets are critical to the economic well-being of the state.

5.1 Highway Assets

Highway assets include roadways and bridges in the state system as well as intermodal connectors and truck parking areas.

5.1.1 Roadway Mileage

The DOTD is responsible for maintaining, operating and enhancing the State system of infrastructure, the principal components of which are highways and bridges. Louisiana separates roadways into four classes: Interstate Highway System (IHS), Non-Interstate National Highway System (NHS), Statewide Highway System (SHS), and Regional Highway System (RHS). **Table 5-1** shows the total mileage in each class.

Table 5-1: Roadway System Mileage

DOTD Road Class	Name	Mileage	Percent
Interstate Highway System	IHS	926	5.6%
Non-Interstate NHS	NHS	2,072	12.4%
Statewide Highway System	SHS	6,203	37.3%
Regional Highway System	RHS	7,442	44.7%
Total System		**16,643**	**100.0%**

Source: DOTD as of January 2015. Notes: Mileage is in roadway miles. The roadway miles do not include bridges, gravel roads, brick roads, or roads without pavement rating indexes.

The IHS is composed entirely of rural and urban interstates, which are designed to provide the highest level of speed and capacity for non-local travel. The NHS includes all other non-interstate roadways on the NHS, such as some urban and rural arterial highways and a few urban and rural collector highways. The SHS complements the NHS and comprises those highways not on the NHS with a principal function of moving people and goods across and within cities and regions, as well as providing access to international markets. The RHS provides access and mobility for local travel.

Louisiana has the 11th largest system in the nation under state control, and a 30th national ranking in total miles of public roadways. A clear line of responsibility exists between local roads, which provide land use access, and access-controlled roads such as interstates, which provide longer-distance mobility. DOTD owns and maintains virtually all of the access-controlled roadways in Louisiana, and the State's parishes and municipal governments own and maintain the local roads. Even so, two lane roads constitute 52 percent of the state-maintained system. DOTD has responsibility for 27 percent of the total system. Of the state-maintained system, 79 percent is classified as rural.

5.1.2 Bridges

As of January 2015, Louisiana has 12,900 bridges within the state or crossing its borders to neighboring states. This is the 21st highest bridge count in the United States and includes bridges and culverts over 20 feet in length, as measured along the centerline of the roadway. The majority of these structures are bridges (rather than culverts), with most located in rural areas. The DOTD owns and maintains almost 62 percent of the bridges in the state. Parishes have responsibility for 35 percent, while municipalities own about 3 percent. Of the 7,963 state-owned structures, 69 percent are in rural areas and 31 percent in urban areas.

A significant portion of Louisiana's state highway system is built on elevated structures. The state has the third highest square footage of state system bridges in the U.S., behind California and Texas[20]. As shown in **Table 5-2**, structures on the Interstate system account for roughly half of the state system total.

Table 5-2: 2014 State System Bridges by Deck Area (square feet)

Category	Total Deck Area	Percentage of Total
IHS	68,001,559	49.3%
NHS	39,160,556	28.4%
SHS	22,882,131	16.6%
RHS	7,876,947	5.7%
Total	137,921,193	100.0%

Source: DOTD

5.1.3 Truck Parking and Intermodal Connectors

Freight movement by truck in Louisiana relies heavily on the Interstate System. I-10, I-12, and I-20 provide much of the east-west movement for trucks while I-49, I-55, and I-59 facilitate north-south truck freight movements. Along the six Interstate routes which span Louisiana are 13 static weigh station facilities with 10 located in pairs at five locations on either side of the highway median. These state controlled sites are needed to ensure compliance with federal and State regulations and laws. Recent technology, including weigh-in-motion (WIM) devices, the Pre-Pass system, enhanced sign lighting, and advanced traveler information, have enhanced the safety and efficiency of freight travel, as they have for passenger travel. Along Louisiana's IHS are 11 rest areas. While each site has available truck parking, a significant demand exists for more truck parking spaces.

5.2 Railroad Assets

According to the Association of American Railroads (AAR), Louisiana is 23rd in the nation in terms of the number of miles of rail. The rail system provides critical linkages to other modes along the Gulf Coast and inland. The Louisiana freight rail system is operated by six large Class I railroads and 15 smaller local, switching, and terminal railroads. The system consists of 2,912 route miles, excluding leases and trackage rights.

[20] *Based on an analysis of the 2013 National Bridge Inventory System*

5.2.1 Rail System Ownership

The majority of rail mileage in the state is owned by four Class I carriers: Union Pacific Railroad (UP), Canadian National Railway (CN), BNSF Railway (BNSF), and the Kansas City Southern Railway (KCS). These railroads own a total of 2,233 route miles. The remaining Class I carriers, the Norfolk Southern Railway (NS) and CSX Transportation (CSXT), own an additional 107 miles on two routes between New Orleans and the Mississippi state line. The 15 short line[21] railroads operating in the state own the remaining 411 route miles in Louisiana. (See **Table 5-3**)

Each Class I carrier has principal routes through the state that are fed by their own branch lines and connecting carriers. **Figure 5-1** shows all freight routes within the state.

[21] *Local, switching, and terminal switching railroads*

Table 5-3: Louisiana Rail System Mileage

Railroad	Reporting Marks	Route Miles Operated				Owned not Operated
		Owned	Leased	Trackage Rights	Total	
Class 1 Railroads		**2,340***	**2**	**241**	**2,583***	**195**
BNSF Railway Company	BNSF	240		111	351	
Canadian National Railway Company	CN	239			239	
CSX Transportation	CSXT	35		8	43	
Kansas City Southern Railway	KCS	673	2	62	737	173
Norfolk Southern Railway	NS	72		4	76	
Union Pacific Railroad	UP	1,321		56	1,377	22
Local, Switching Terminal Railroads		**411**	**208**	**201**	**820**	
Acadiana Railway	AKDN	68	5	21	94	
Arkansas Louisiana & Mississippi Railroad	ALM	39			39	
Baton Rouge Southern Railroad	BRS		2		2	
Delta Southern Railroad	DSRR	28	15		43	
East Camden &Highland Railroad	EACH	2			2	
Gloster Southern Railroad**	GLSR	21			21	
Lake Charles Harbor & Terminal District (Port of Lake Charles, Port Rail Link)	LCH	13			13	
Louisiana & Delta Railroad	LDRR	120		178	298	
Louisiana and North West Railroad	LNW	38			38	
Louisiana Southern Railroad	LAS		157		157	
New Orleans and Gulf Coast Railway	NOGC	24	13		37	
New Orleans Public Belt Railroad	NOPB	26			26	
North Louisiana & Arkansas Railroad	NLA		16	2	18	
Ouachita Railroad	OUCH	10			10	
Timber Rock Railroad	TIBR	22			22	
TOTAL MILES		**2,751***	**210**	**442**	**3,603***	**195**

Sources: 2015 Louisiana State Rail Plan, CDM Smith; Class 1 Railroads – 2011 R-1 Annual Reports to the Surface Transportation Board – Form 702 Miles of Road at Close of Year, by States; and Local, Switching and Terminal Companies – Study team interviews with short line contacts within State of Louisiana, Railroad websites, various maps including the Professional Railroad Atlas of North America, Railroad Infrastructure Services, 2004, p. 60.

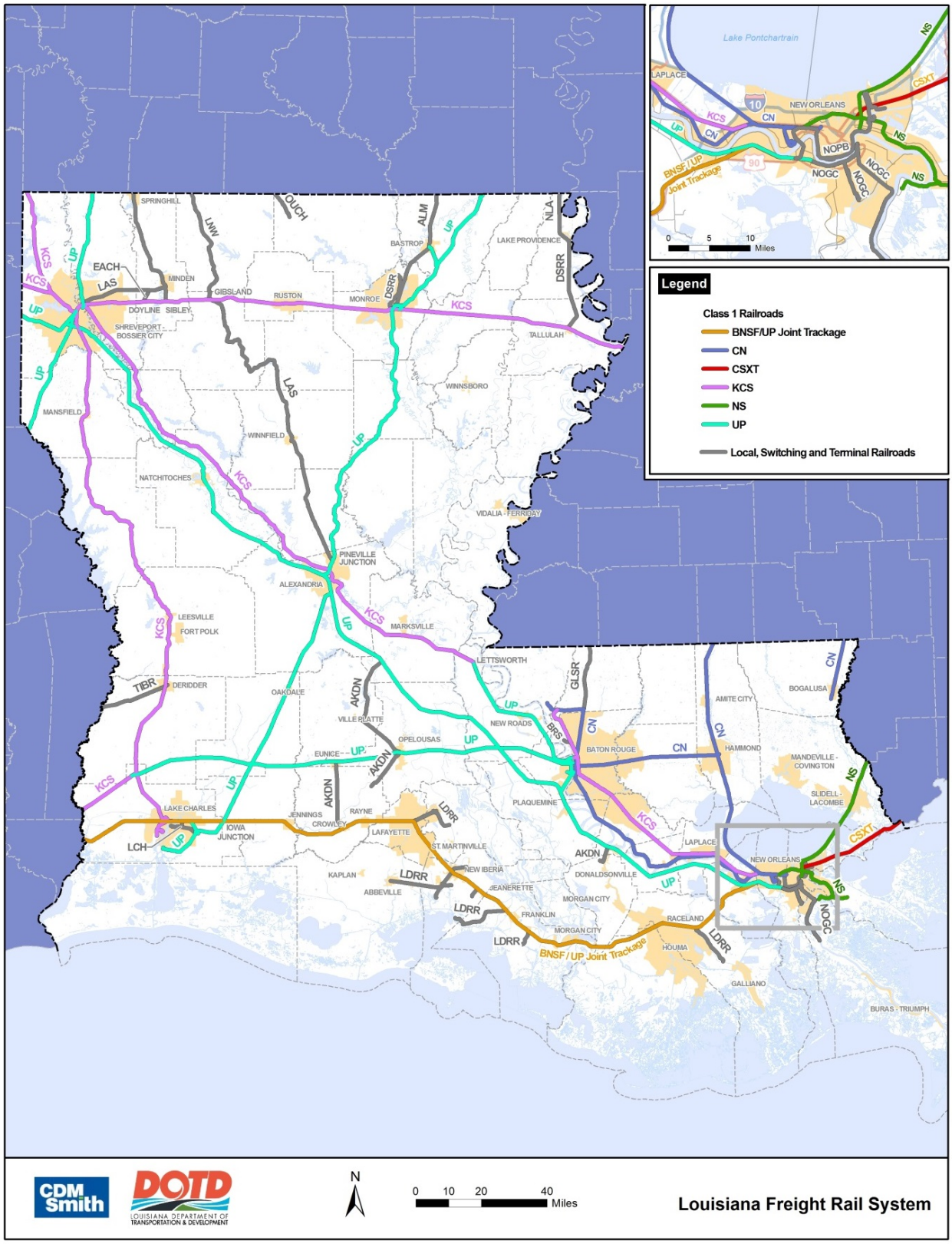
**Notes:*

- *Owned miles for both BNSF and UP include 240 miles of joint trackage.*
- *Totals, however, count the 240 miles of joint trackage once, to avoid double counting.*
- *A switching and terminal railroad is a freight railroad company whose primary purpose is to perform local switching services or to own and operate a terminal facility. Switching is a type of operation done within the limits of a yard. It generally consists of making up and breaking up trains, storing and classifying cars, serving industries within yard limits, and other related purposes. These movements are made at slow speed under special yard rules.*

***Note:*

- *Gloster Southern Railroad is not operating and track has been removed. However, it has not been abandoned. Accordingly, its Louisiana route mileage is counted above.*

Figure 5-1: Freight Railroad Lines in Louisiana



Source: 2015 Louisiana State Rail Plan, CDM Smith

5.2.2 Rail Freight Terminals

Louisiana's Class I railroads operate multiple freight terminals in Louisiana (**Table 5-4**). BNSF Railroad operates a traditional carload switching yard in Lafayette and one intermodal and one switching yard in New Orleans. CN Railway operates an intermodal facility in New Orleans with primary yards for other rail traffic in New Orleans at Mays Yard, and yards in Baton Rouge and Hammond. CSXT operates three yards in Gentilly including a carload switching yard, intermodal yard and a rail car-to-truck transloading yard. KCS Railway has no intermodal facilities in Louisiana but has eight switching yards in five locations across the state. NS Railway has two primary switching yards in New Orleans. UP Railroad has eight freight terminal facilities in Louisiana including one intermodal yard in New Orleans. UP also serves three Gulf of Mexico ports in Louisiana: Lake Charles, Baton Rouge, and New Orleans.

Table 5-4: Existing Class 1 Railroad Freight Terminals in Louisiana

Freight Rail Operator	Location	Facility or Yard Type
BNSF Railway	Lafayette	Traditional carload switching yard
	New Orleans – Avondale	Traditional carload switching yard
	New Orleans – Westwego	Intermodal yard
CN	New Orleans	Intermodal yard
	New Orleans – Mays Yard	Traditional carload switching yard
	Baton Rouge	Traditional carload switching yard
	Hammond	Traditional carload switching yard
CSX Transportation	Gentilly	Major merchandise switching yard
	Gentilly-CSXT Intermodal	Hub intermodal yard
	Gentilly-CSXT TRANSFLO	Bulk material rail car-to-truck transloading yard
KCS Railway	New Orleans – Shrewsbury	Traditional carload switching yard
	Shreveport – Deramus, Harriet Street Yards	Traditional carload switching yard
	Baton Rouge	Traditional carload switching yard
	Lake Charles – Mossville and Rose Bluff Yards	Traditional carload switching yard
	Monroe	Traditional carload switching yard
NS Railway	New Orleans – Oliver Street	Intermodal and traditional carload switching yard
	New Orleans – Chalmette	Traditional carload switching yard
UP Railroad	New Orleans – Avondale	Intermodal and traditional carload switching yard
	New Orleans –Gouldsboro	Traditional carload switching yard
	Livonia	Traditional carload switching yard
	Baton Rouge	Traditional carload switching yard
	Alexandria	Traditional carload switching yard
	Monroe	Traditional carload switching yard
	Shreveport – Hollywood	Traditional carload switching yard
	Shreveport – Riverside	Traditional carload switching yard

Source: 2015 Louisiana State Rail Plan, CDM Smith

5.3 Waterway and Port Assets

Waterways and ports are critical to the movement of freight and the economy of Louisiana. Nearly a third of all freight moved in the state is by water with over 513 million tons being shipped into and out of the state annually. This tonnage is expected to increase in the next 25 years.

5.3.1 Waterways

There are 17 major waterway corridor segments comprising Louisiana's system that are categorized as either deep-draft, inland, or coastal. The major waterways and the segments are listed in **Table 5-5**.

Table 5-5: Navigable Waterway Corridors in Louisiana by Major Segments

Deep-Draft	Inland	Coastal
• Calcasieu River and Pass (12-40) • Mississippi River - Baton Rouge to New Orleans (45) • Mississippi River - New Orleans to Head of Passes (45)	• Atchafalaya River (Old River to Morgan City) (12) • Gulf Intracoastal Waterway (GIWW)- Morgan City-Port Allen Route (12) • Mississippi River – Baton Rouge north to state border (9) • Ouachita/Black River (9) • Red River-Shreveport to Mississippi River (9)	• Atchafalaya (Morgan City to the Gulf) (20) • Barataria Bay (12) • Bayou Lafourche (9 and 28*) • GIWW (12) • Houma Navigation Canal (15-18) • Mermentau River (9-14) • Vermilion River (5-11) • Freshwater Bayou • North Pass Manchac

Depth in feet (). Source: Waterborne Commerce of the United States (WCUS), U.S. Army Corps of Engineers, 2011 and DOTD.
**Bayou Lafourche is 28 feet deep at Port Fourchon*

5.3.2 Ports

There are seven active deep-draft ports, one deep-draft port in development, 17 shallow-draft inland ports, and 15 coastal ports in the state (**Table 5-6**). The tiered ports and waterways are shown in **Figure 5-2**.

Table 5-6: Louisiana Ports

Deep-Draft Ports	Shallow-Draft Inland Ports	Coastal Ports
• Baton Rouge • South Louisiana • New Orleans • St. Bernard • Plaquemines • Lake Charles • Louisiana Offshore Oil Port (LOOP) • Louisiana International Deep Water Gulf Transfer Terminal*	• Avoyelles • Greater Krotz Springs • Vinton • Vidalia • Tensas* • Madison Parish • Lake Providence • Columbia • Greater Ouachita • Point Coupee • Alexandria • Natchitoches • Red River • Caddo Bossier • Grant Parish Port Commission* • Cane River Waterway District* • West Feliciana*	• Port Fourchon • Grand Isle • Terrebonne • Morgan City • West St. Mary • Iberia • West Calcasieu • West Cameron • Twin Parish • Manchac • Vermilion • Jefferson Parish Economic Development and Port District* • Jennings Navigation District* • East Cameron Parish Port Commission • Mermentau

*Source: DOTD. *Currently being studied*

Figure 5-2: Louisiana Ports and Waterways by Tier

5.3.3 Marine Highway System in Louisiana

In 2007, Congress designated a 29,000-mile system of navigable waterways that serve freight and passenger transportation needs throughout the United States – the Marine Highway system. While there is no funding for a program to improve and expand the system at this time, designating a waterway as a marine highway confers preferential treatment for any future federal assistance.

The Marine Highway system consists of rivers, bays, channels, the Saint Lawrence Seaway, the Great Lakes, coastal shipping lanes, and open ocean routes. The intent is to expand the use of the U.S. waterway network, reduce congestion on landside transportation systems, reduce emissions, and provide new transportation options.

There are 24 federally designated Marine Highway routes, three of which are integral to Louisiana. The DOTD is the sponsor of these routes:

- The M-10 Corridor runs from Brownsville, TX to Port Manatee, FL and includes all of the Gulf Intracoastal Waterway in Louisiana as well as connecting ports, harbors, and commercial navigation channels. The M-10 generally runs parallel to Interstate 10.

- The M-49 Corridor serves as a parallel route to I-49 and includes the Atchafalaya River, the J. Bennett Johnson Waterway (Red River), and various connecting ports, channels, and harbors. The corridor runs through Louisiana from Shreveport to Morgan City, where it connects with M-10.

- The M-55 Corridor includes the Mississippi and Illinois Rivers from New Orleans to Chicago via St. Louis, Missouri. It connects with various other Marine Highways including the M-10 at New Orleans. The Mississippi River system moves sixty percent of all U.S. grain exports and includes the largest port in the country by tonnage (the Port of South Louisiana).[22] Through M-55, Louisiana is connected to 34 other states.

Figure 5-3 shows the designated Marine Highway routes, including those in Louisiana.

[22] *https://www.marad.dot.gov/wp-content/uploads/pdf/Click-here-for-Route-Descriptions.pdf*

Figure 5-3: Federally Designated Marine Highway Routes

Source: DOTD and CDM Smith.

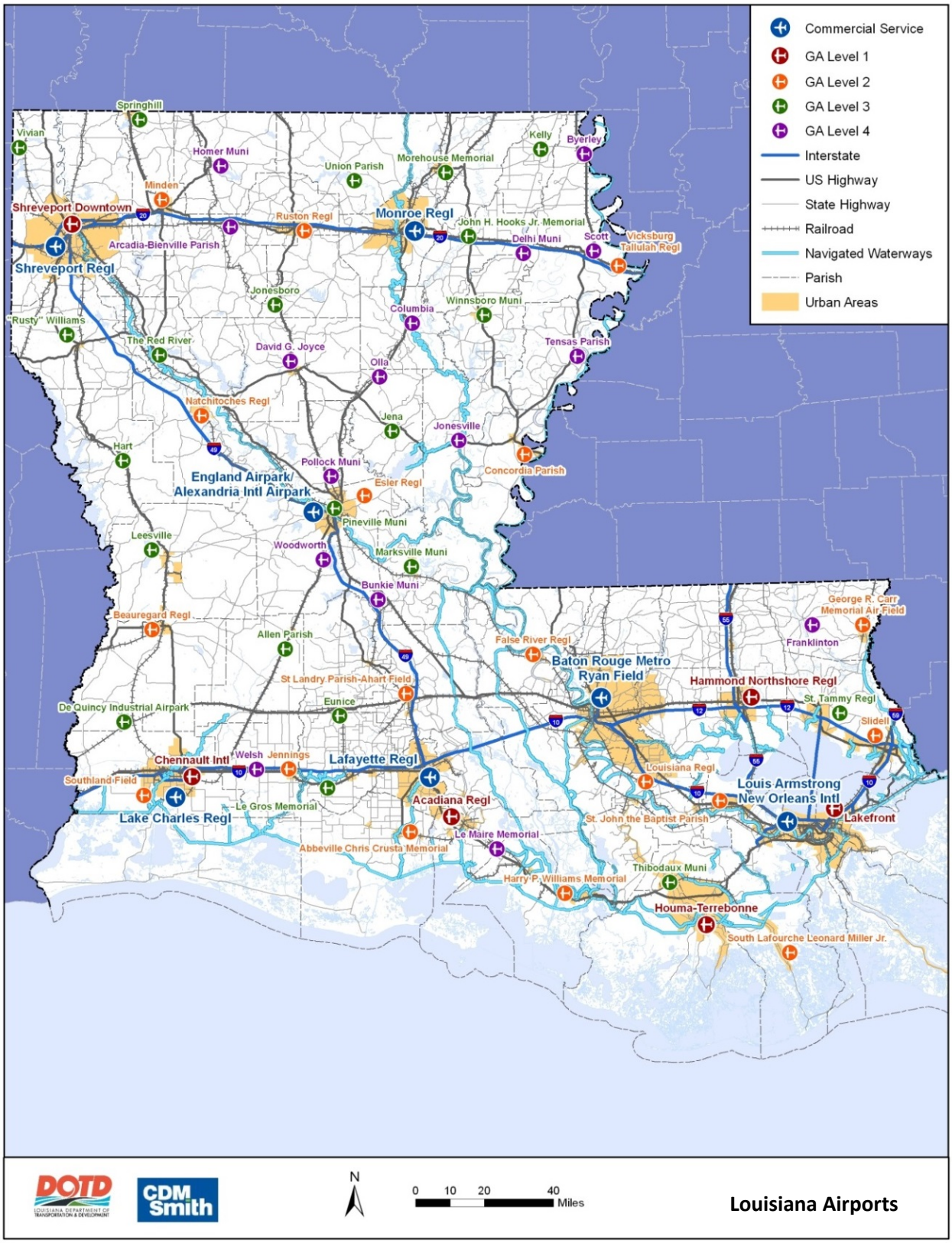
5.4 Aviation Assets

Louisiana's aviation system of 68 airports consists of airports that work together to meet the needs of different market segments. The aviation system is comprised of commercial service and general aviation (GA) airports (**Figure 5-4**). General aviation airports are those that support non-commercial (airline) aviation such as corporate, training, and recreational aircraft. Commercial service airports are facilities designed for scheduled passenger service aircraft with more than 2,500 boardings. The seven commercial service airports are Alexandria International, Baton Rouge Metropolitan, Lafayette Regional, Lake Charles Regional, Monroe Regional, Louis Armstrong New Orleans International, and Shreveport Regional. According to the Federal Aviation Administration's (FAA) National Plan of Integrated Airport Systems (NPIAS), three general aviation airports (Lakefront, Slidell, and Shreveport Regional) are classified as general aviation reliever airports, which are intended to alleviate congestion at busy commercial service airports nearby. Airports included in the NPIAS are eligible for federal funding; however, 13 of Louisiana's airports are not included.

As part of the update to the 2015 Louisiana Aviation System Plan, the general aviation airports were classified into four roles as follows:

- **Level 1 Airport** – Maintains a consistent and contributing role in enabling the local, regional, and statewide economy to have access to and from the national and global economy
- **Level 2 Airport** – Maintains a contributing role in supporting the local and regional economies and connecting them to the state and national economies
- **Level 3 Airport** – Maintains a supplemental contributing role for the local economy and community access
- **Level 4 Airport** – Maintains a limited contributing role for the local economy and community access

Figure 5-4: Louisiana Airport System

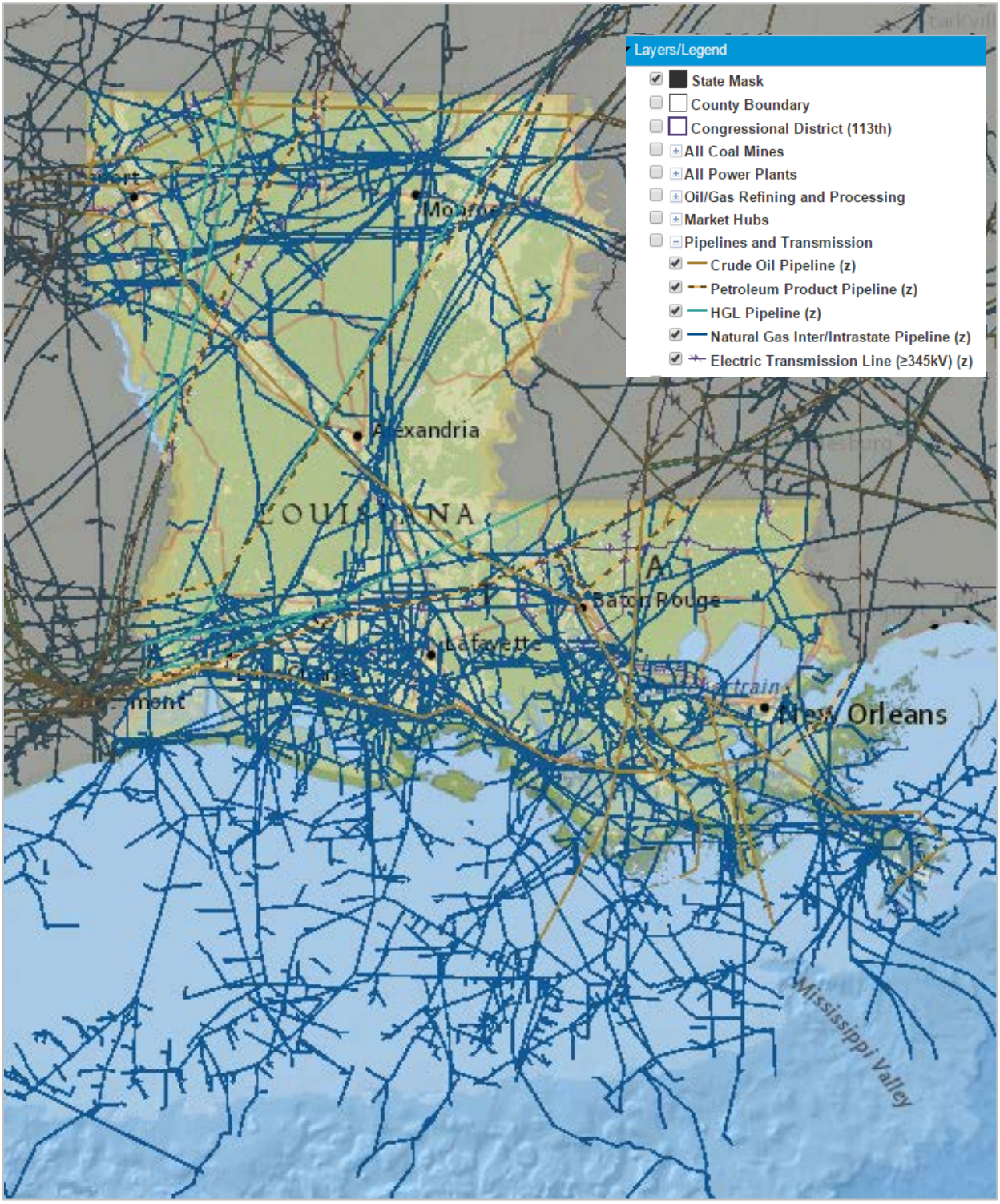


Source: 2015 Louisiana Airport System Plan, CDM Smith

5.5 Pipeline Assets

According to the Louisiana Department of Natural Resources (DNR), Louisiana has close to 50,000 miles of pipelines. This integrated system of pipelines crisscrosses every major highway, railroad and navigable waterway in Louisiana. The greatest pipeline mileage is in the 19 parishes located on or near the Gulf of Mexico which is nearest to the major oil and gas production areas. There are three liquid natural gas (LNG) import locations in Louisiana: Lake Charles, Energy Bridge and Sabine Pass. The three pipelines importing the LNG to these locations have a capacity of 5,200 million cubic feet per day. The Henry Hub in Erath is the point of connection for nine interstate and four intrastate pipelines that provide access to major markets throughout the country; Henry Hub is used as the pricing point for natural gas futures trading on the New York Mercantile Exchange. **Figure 5-5** illustrates the location of pipelines in Louisiana.

Figure 5-5: Location of Pipelines in Louisiana

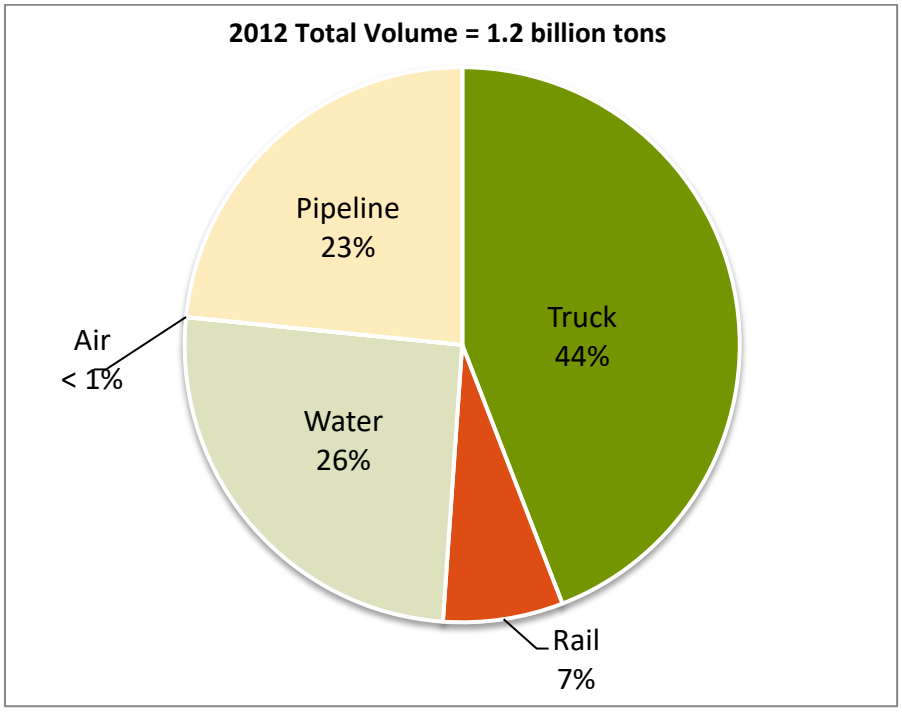


Source: U.S. Energy Information Administration, State Profile and Energy Estimates, Retrieved 2-10-15

6. CONDITION AND PERFORMANCE

The condition and performance of Louisiana's freight transportation system is a product of freight transportation funding availability, including the private sector's investments, system demand, economic conditions and the quality and timing of operations and maintenance. The condition and performance of the Louisiana freight system directly impacts the costs necessary to move goods for the state's critical industries. In 2012, 1.2 billion tons of goods moved into, out of, through, and within Louisiana (**Figure 6-1**). The highway system accommodated most of these goods with over 569 million tons shipped to, from, through or within Louisiana in 2012. Ports and waterways are also very important, facilitating the movement of over 26 percent of all the tonnage shipped throughout the state. Over the next 25 years, these mode shares are expected to remain in place with truck and water being the predominant modes used to move Louisiana goods.

Figure 6-1: Total Tonnage by Mode (2012)



Source: Transearch 2009, updated by 2012 FHWA Freight Analysis Framework

6.1 Highways

Freight movement by truck in Louisiana relies heavily on the interstate system. I-20, I-12, and I-10 provide much of the east-west movement for trucks while I-49 and I-55 facilitate north-south truck freight movements. This can be seen on **Figure 6-2,** which shows the truck tonnage flows in Louisiana for 2012. Other roadways critical to truck freight as shown are US 84 between Natchitoches and Winnfield and US 190 between Baton Rouge and Opelousas.

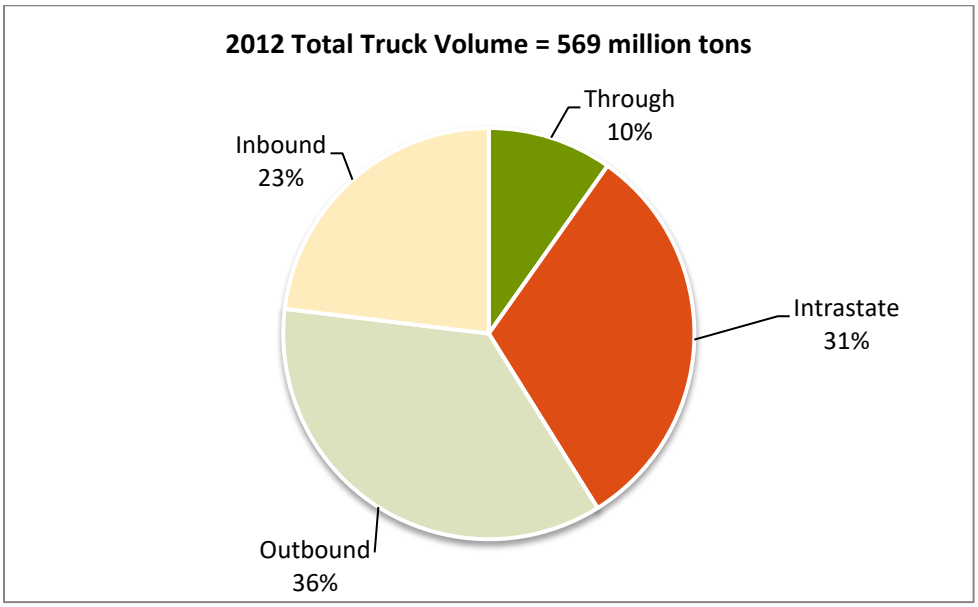
Figure 6-2: Highway Freight Tonnage Flows, 2012

Source: Transearch 2009, updated by 2012 FHWA Freight Analysis Framework and CDM Smith

Though these roadways carry the bulk of the tonnage, other roadways such as those in rural areas have high percentages of truck traffic indicating that they provide critical linkages to the localized economies throughout the state. All those roadways critical to freight movement in Louisiana have been defined through the tiering process described in **Chapter 5**.

In 2012, intrastate movements accounted for 31 percent of the total tonnage of freight moved, and outbound shipments contributed 36 percent. Inbound and through truck tonnages accounted for 23 and 10 percent of the total, respectively (**Figure 6-3**).

Figure 6-3: Louisiana Truck Tonnage by Traffic Type, 2012



Source: Transearch 2009, updated by 2012 FHWA Freight Analysis Framework

6.1.1 Truck Bottlenecks

Highway congestion challenges shippers to deliver cargo to destinations within time window commitments. Unreliable travel conditions create inefficiencies and increase costs that are often passed on to the consumer. Additionally, in the stop and go conditions that are typical of highly congested highway corridors, trucks cause additional delays to other vehicles because the time it takes a tractor-trailer to decelerate and accelerate is considerably longer than for passenger vehicles.

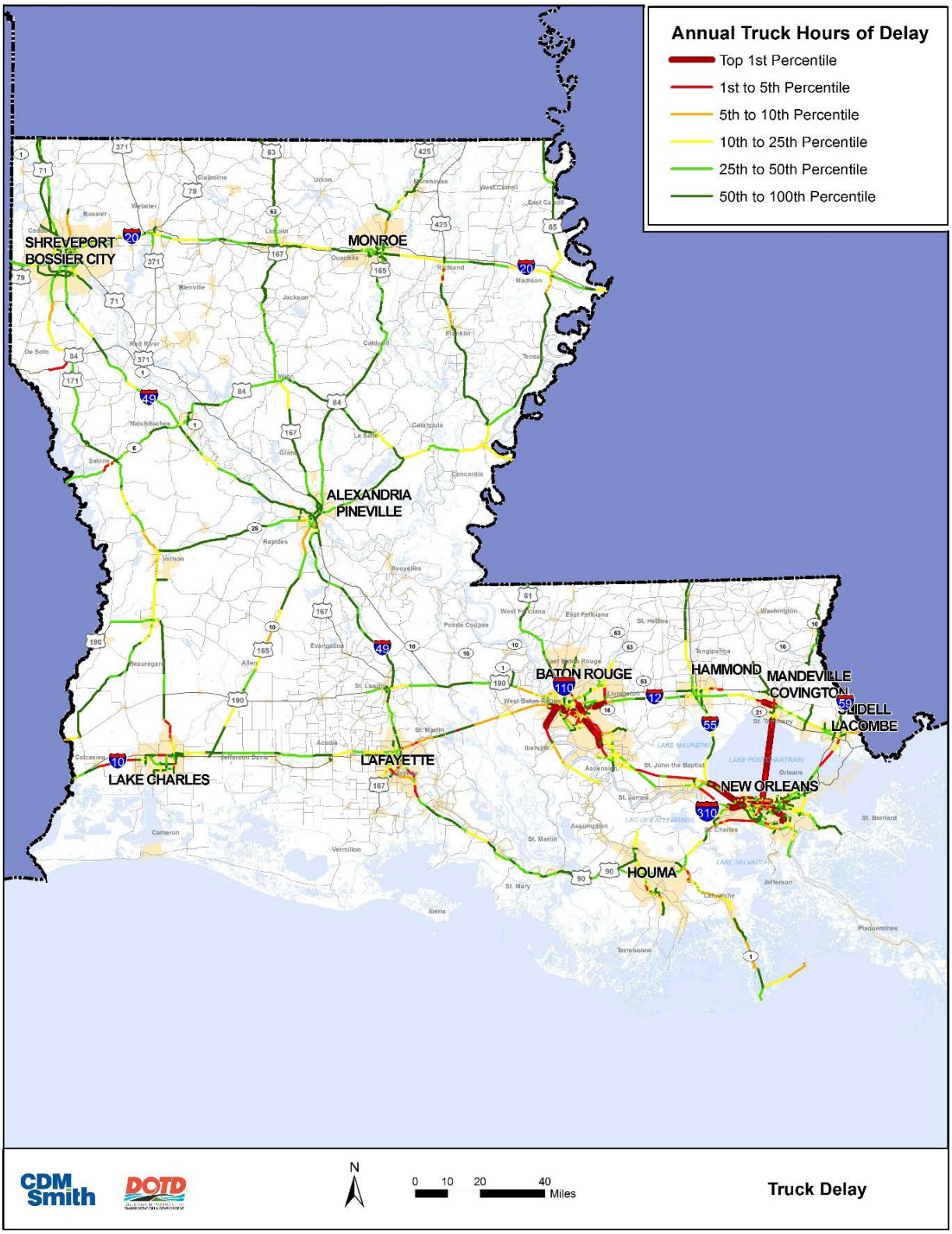
Truck delays are highest on the Interstate system, and for the most part, around urbanized areas. Interstate 10, which carries a large proportion of through travel and high truck volumes, experiences the most truck delay because it connects the major trading regions of the Southern United States with Louisiana. The locations of greatest delay incurred by trucks, from continuous truck speed data collected in 2016 on the National Highway System, are listed in **Table 6-1** and shown on **Figure 6-4**.

Table 6-1: Locations of Truck Delay, 2016

Interstate/Region	Location
I-10	• West of LA 415 to the I-10/I-12 split (Baton Rouge) • Exit 163 to Exit 166 (Baton Rouge) • East of I-55 to I-610 split (Kenner-New Orleans), most sections • US 61 to US 90 (New Orleans, mid-city) • I-610 to Intracoastal Waterway (New Orleans)
I-12	• East of US 61 (Baton Rouge) • LA 21 to LA 190 (Mandeville) • Exit 57 to US 190 (Covington)
LA 1	• City of Plaquemine to Port Allen
Lake Pontchartrain Causeway	• Lake Pontchartrain Causeway
US 90 Business	• I-10 to Mississippi River (New Orleans)
US 61	• US 190 to I-12 • I-310 to Kenner (Kenner)
Lake Charles	• I-10, I-210W to I-210E • US 171 north of I-10
Lafayette	• I-10, I-49 to LA 31 • US 90, LA 182 to Ambassador Caffrey Parkway (LA 3073) • Ambassador Caffrey Parkway (LA 3073), US 167 to LA 89-1 • LA 339, North of Ambassador Caffrey Parkway (LA 3073)
Shreveport	• I-220, from US 71 to LA 173
De Soto Parish	• US 84, west of Mansfield
Richland Parish	• US 425, LA 15 to I-20

Source: FHWA, National Performance Management Research Dataset, DOTD, and CDM Smith

Figure 6-4: Truck Delay (in percentiles), 2016



Source: National Performance Management Research Dataset

6.1.2 Pavement Conditions

Louisiana DOTD's goal for pavement is to effectively maintain and improve the system so that the system stays in its current or better condition. To achieve this objective, DOTD's 2015 Asset Management Plan has established performance goals per road class:

- IHS at 97 percent fair or better
- NHS at 95 percent fair or better
- SHS at 90 percent fair or better
- RHS at 70 percent fair or better

The roadway conditions for the base year of 2013 are shown in Table 6-2 for each system element as a percentage of that system's mileage. The rating categories range from *very poor* to *very good*. In 2013, 90.9 percent of all roadway miles were in fair or better condition. The IHS was in the best condition with 97.9 percent of the roadway mileage in fair or better condition, including 49.2 percent (766 miles) in *very good* condition. Only 1.7 percent of the Louisiana system is considered in *very poor* condition.

Table 6-2: Roadway System Pavement Conditions, 2013

System	Very Poor	Poor	Fair	Good	Very Good	Fair or Better
IHS	0.2%	1.9%	26.7%	22.0%	49.2%	97.9%
NHS	2.9%	6.8%	32.5%	32.9%	24.9%	90.3%
SHS	0.6%	3.6%	29.2%	42.6%	24.0%	95.8%
RHS	2.7%	12.4%	39.9%	32.9%	12.1%	84.9%
Total	**1.7%**	**7.4%**	**33.7%**	**35.7%**	**21.6%**	**90.9%**

Source: DOTD

6.1.3 Bridge Conditions

The sufficiency rating for bridges is an estimate of the quality of the structure based on the observed bridge element condition, much like pavement ratings for a roadway. The rating is based on a 100 to 0 rating scale with 100 being new and 0 being an unusable structure. According to the FHWA, a bridge is "structurally deficient" if the load-carrying elements are in diminished condition because of deterioration and/or damage. Bridges identified as "structurally deficient" are not unsafe, but could require traffic and/or load restrictions. Since 2012, system wide bridge condition has been measured as the ratio of the total deck area of structurally deficient bridges, compared to the total deck area of all bridges on the state system. While this measure is used for national reporting, the DOTD compiles and reviews a far more detailed inventory of bridge condition to understand the state's bridge needs and performance at the level of individual bridge components.

The 2015 Asset Management Plan has set the following performance outcomes for bridge condition:

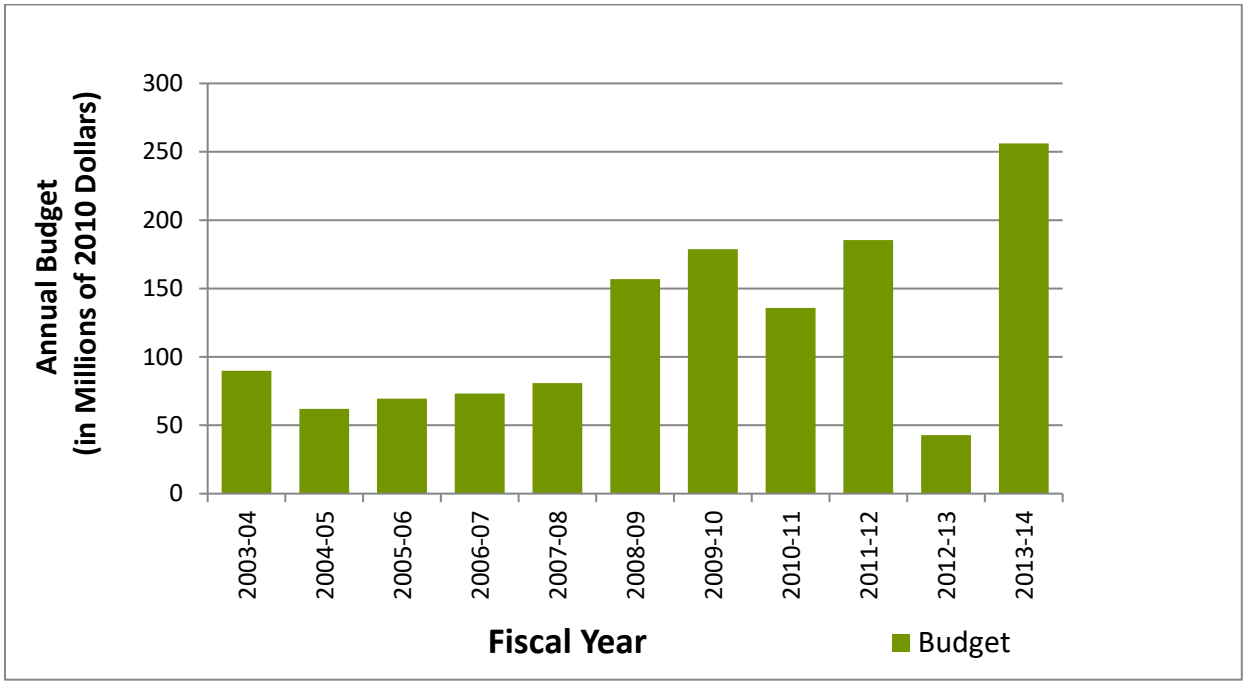
- No more than 10 percent of total deck area on the state system ("on-system") in structurally deficient condition

Over the past 10 years, the percentage of total deck area corresponding to bridges rated structurally deficient has remained under 10 percent. Approximately 59 percent of DOTD-maintained bridges have a

sufficiency rating of 80 or better, and 34 percent have a rating between 50 and 80; bridges in this rating range were eligible for federal funds[23] to preserve and/or rehabilitate bridges. The remaining 8 percent of DOTD bridges are below a 50 sufficiency rating and are candidates for replacement.

As shown in **Figure 6-5**, the budget for bridge maintenance and preservation has varied considerably from year to year, but a significant uptick occurred in fiscal year (FY) 2013-2014. In the 5 years between FY 2003-2004 and FY 2007-2008, bridge spending averaged $75.0 million, while in the 6 years between FY 2008-2009 and FY 2013-2014 bridge spending more than doubled, to $159.3 million (in constant 2010 dollars). FY 2013-2014 was a notable year, when $278.0 million was dedicated to bridge spending, the highest in the 10-year period. Generally speaking, bridges on Louisiana's major roadways are in better condition than bridges on the local roadway system.

Figure 6-5: Trends in Louisiana State System Bridge Condition & Spending (2010 Dollars)



Source: DOTD

6.1.4 Safety and Security

Highway Safety

The DOTD tracks crash information to identify safety hotspots and to plan improvements that can make the roadway system safer. Louisiana's Strategic Highway Safety Plan (SHSP) outlines safety trends and challenges, and creates a framework for reducing crashes and fatalities from a long-term perspective. The interaction of trucks and passenger vehicles, as well as with bicycles and pedestrians, on the state highway system is a focus area for the Department, and over time, design, and engineering improvements, together with focus from the licensing, regulatory, enforcement and technology enhancements, are expected to reduce fatalities. Currently, and as documented by the SHSP, truck and

With the passage of the FAST Act in 2015, the eligibility criteria changed; however, these bridge rating statistics remain a valid way to describe the quality of bridge conditions.

bus fatalities constitute a rising share of total vehicular fatalities. While the number of passenger vehicle fatalities has generally declined in recent years, the number and rate of commercial vehicle fatalities has remained more constant. The safety data presented below pertain to trucks and buses – both are defined as commercial vehicles in the state database.

Crash Frequency

Between 2009 and 2013, commercial vehicle fatal crashes represented between 10 - 15 percent of fatal motor vehicle crashes in Louisiana. While the number of all motor vehicle crashes decreased by 1.3 percent and fatal crashes decreased by 10.7 percent during that time period, the number of commercial vehicle crashes increased by 7 percent and the number of fatal crashes increased by 12.2 percent. However, the number of fatal truck crashes in 2013 was lower than at any time since 2009 (**Table 6-3**). The 2009 recession, which caused a reduction in economic activity and vehicles miles of travel, is almost certainly a contributing factor in considering the reduction in fatal crashes for all vehicles in recent years.

Table 6-3: All Motor Vehicle and Commercial Motor Vehicle Crashes, 2009 to 2013

Year	All Vehicles		Commercial Vehicles		
	Crashes	Fatal Crashes	Crashes	Fatal Crashes	Fatal Crashes as Percentage of Total
2009	156,029	729	3,520	74	10.2%
2010	147,743	643	3,697	96	14.9%
2011	149,830	630	3,666	86	13.7%
2012	153,254	654	3,691	93	14.2%
2013	153,951	651	3,768	83	12.7%

Source: LSU HSRG, Louisiana Motor Vehicle Reports, A1: Traffic Information Overview, 2009-2013; LSU HSRG, Louisiana Commercial Motor Vehicle Reports, D1: Fatal, Injury and PDO CMV Crashes by Parish, 2009-2013

Crash Severity

In 2013, there were over 3,700 crashes involving a commercial vehicle (**Table 6-4**). The percentage of crashes that involved fatalities, injury, and property damage only (PDO) was 2.2 percent, 42 percent, and 56 percent, respectively. Commercial motor vehicle crashes represented 12.7 percent and 3.6 percent of all fatal and injury motor vehicle crashes. Ninety-seven fatalities resulted from 83 commercial fatal crashes and over 3,950 persons were injured in 1,580 commercial injury crashes (**Table 6-5**). Of all persons killed by motor vehicle crashes, 13.8 percent were killed in those involving commercial motor vehicles.

Table 6-4: Commercial Motor Vehicle Crashes by Severity, 2013

Crash Type			
Fatal	Injury	PDO	Total
83	1,582	2,103	3,768

Source: LSU HSRG, Louisiana Commercial Motor Vehicle Reports, D1: Fatal, Injury and PDO CMV Crashes by Parish, 2013

Table 6-5: Persons Killed and Injured by Commercial Motor Vehicle Crashes, 2013

Role	Persons Killed	Persons Injured
Drivers	70	2,345
Passengers	18	1,576
Pedestrians	9	32
Total	**97**	**3,953**

Source: LSU HSRG, Louisiana Commercial Motor Vehicle Reports, B6: Persons Killed by Age, Role, Gender and Parish, 2013

Crashes by Location and Roadway Type

Commercial motor vehicle crashes were somewhat more likely to occur on rural roadways (55 percent) compared to urban roadways (45 percent) (**Table 6-6**), however nearly three quarters of all fatal crashes occurred on rural roadways. Over half of all crashes occurred on State, Parish, and City/Local roadways, approximately one quarter on Interstate/toll roadways, and approximately one fifth on U.S. Highway roadways; the distribution of fatal and injury crashes by roadway type was similar. The greatest number of fatal, injury, and total crashes involving commercial vehicles occurred on rural state roadways.

Table 6-6: Commercial Motor Vehicle Crashes by Location, Roadway Type and Severity, 2013

	Fatal Crashes			Injury Crashes			Total Crashes		
Roadway Type	Rural	Urban	Total	Rural	Urban	Total	Rural	Urban	Total
Interstate/Toll	14	10	**24**	173	163	**336**	537	436	**973**
US Highway	11	3	**14**	160	155	**315**	341	361	**702**
State Road	32	4	**36**	427	172	**599**	943	389	**1,332**
Parish Road	5	-	**5**	73	9	**82**	217	34	**251**
City/Local Roads and Streets	-	4	**4**	4	235	**239**	8	481	**489**
Total	**62**	**21**	**83**	**837**	**734**	**1,571**	**2,046**	**1,701**	**3,747**

Source: LSU HSRG, Louisiana Commercial Motor Vehicle Reports, D6: Fatal, Injury and PDO Rural/Urban CMV Crashes by Highway Type, 2013

Crashes by Collision Type, Violation, and Distraction

Approximately one third of all commercial motor vehicle crashes involved a rear end collision (over 30 percent), resulting in 23 percent of all fatal crashes (**Table 6-7**). Commercial motor vehicles and non-commercial vehicles were equally cited for operational violations for all crashes that included violations; however non-commercial motor vehicles received approximately two thirds of all violations for fatal crashes. About 20 percent of commercial motor vehicle crashes are related to driver distraction.

Table 6-7: Commercial Motor Vehicle Crashes by Collision Type and Severity, 2013

Collision Type	Fatal Crashes	Injury Crashes	Total Crashes
Head-On	9	36	71
Left Turn - Angle	3	44	98
Left Turn - Opposite Direction	7	46	107
Left Turn - Same Direction	-	25	59
Non-Collision with Motor Vehicle	13	224	680
Rear End	19	540	1,145
Right Turn - Angle	17	263	531
Right Turn - Opposite Direction	-	7	20
Right Turn - Same Direction	1	22	61
Sideswipe - Opposite Direction	5	51	111
Sideswipe - Same Direction	3	191	544
Other	6	133	341
Total	**83**	**1,582**	**3,768**

Source: LSU HSRG, Louisiana Commercial Motor Vehicle Reports, F1: CMV Crashes by Collision Type, 2013

Security

The freight system moves significant quantities of potentially hazardous and dangerous goods and the security of freight infrastructure and freight-carrying vessels is a serious concern of multiple State and federal agencies, as well as the private sector. While security measures are easier to implement within a closed system such as a waterway or airport, commercial vehicles also must address security due to the heavy reliance of the petrochemical industry on the highway system. Federal security programs like the Secure Freight Initiative employ technology that can scan and detect radioactive material in real-time, ensuring no nuclear material is traveling inappropriately.[24] Statewide Intelligent Transportation Systems (ITS) strategies like weigh-in-motion (WIM) and driver credentialing allow companies, cargo and drivers to ship goods without stopping en route. This adds a layer of security while promoting smooth and efficient traffic flow.

From the perspective of individual shipments by truck, the security measure most frequently used is an electronic cargo seal system which transmits data and locks a container or trailer. These systems document potentially important information about the shipment contents, the shipper, the origin and destination of the shipment and a variety of other data that helps to build accountability, intelligence and security[25].

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[24] *U.S. Department of Homeland Security. Secure Freight Initiative. Web. <http://www.dhs.gov/secure-freight-initiative>.*

[25] *"Homeland Security and the Trucking Industry", Intelligent Transportation Systems Institute Center for Transportation Studies, University of Minnesota; American Transportation Research Institute (July 2005)*

6.1.5 Other Factors Affecting Performance and Capacity

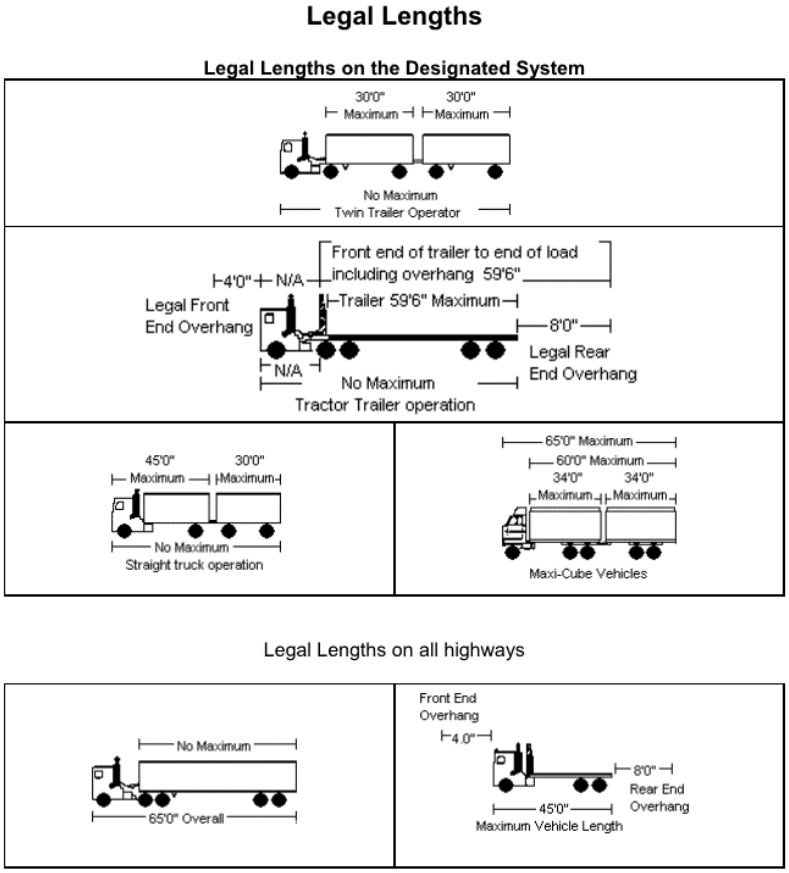
The performance and capacity of the truck system is affected by congestion, bottlenecks, rail grade crossings, and other physical restrictions. It is also affected by the regulatory limits, restrictions, and requirements aimed primarily at improving safety. These factors also have implications for the movement of goods by truck.

Truck Size and Weight Limits

Truck size limits are established to ensure safety and the ability of trucks to move within the geometry (road width, turning radii, etc.) of the highway system. Load restrictions protect the integrity of bridges, buildings within a community (especially in dense urban areas) and pavement. There is flexibility in State and federal size and weight limitations that allows shipments to be combined if a single shipment is less than the legal size or weight. The maximum legal width of any vehicle is 102 inches (exclusive of safety devices) with no loads permitted to project more than 12 inches beyond the width of its body. The maximum legal height of a vehicle is 14 feet 0 inches on interstate highways and 13 feet 6 inches on non-interstate highways.

The maximum legal length of any single vehicle is 45 feet with the maximum legal length of a combination of vehicles on highways other than the Designated Truck Route set at 65 feet and 59 feet 6 inches on the Designated Truck Route. The size limits for allowable vehicles are shown in **Figure 6-6**.

Figure 6-6: Legal Truck Lengths on the Designated System



Source: Louisiana Regulations for Trucks, Vehicles and Loads (2013), DOTD

Truck weight limits are put in place to increase safety as well as minimize the impact to road pavement and bridges. Truck weight limits are calculated by the number of truck axles and the weight limit for each, with a maximum gross weight limit of 80,000 lbs. without a permit for single and tandem axle vehicles. Tridum and quadrum axle gross vehicle weight limits are 83,400 lbs. on Interstates and 88,000 lbs. on non-Interstates. The maximum legal axle weights are:

- Single Axles—20,000 lbs. on Interstates and 22,000 lbs. on non-Interstates
- Tandem Axles—34,000 lbs. on Interstates and 37,000 lbs. on non-Interstates
- Tridum Axles—42,000 lbs. on Interstates and 45,000 lbs. on non-Interstates
- Quadrum Axles—50,000 lbs. on Interstates and 53,000 lbs. on non-Interstates

An exception to these limits is vehicles with tandem axles carrying forest products (in their natural state) which are 40,000 lbs. per axle.

Permitting Requirements

Oversize and overweight permits must be obtained from the DOTD to operate a vehicle which exceeds the legal size or weight on state highways. A number of exceptions can be found in the *Louisiana Regulations for Trucks, Vehicles and Loads (2013).* Oversize and overweight permits are issued only for indivisible vehicles and loads which are those that cannot be easily divided, broken down or dismantled to conform to the legal limitations. Permits are then issued to ensure a designated route is established that is able to accommodate the unique nature of the shipment.

Driver Hours of Service

The Federal Motor Carrier Safety Administration (FMCSA) has established hours of service (HOS) regulations for drivers of commercial vehicles to limit the number of fatigued drivers on the roadways. These regulations put limits in place about when and how long a driver is able to operate a vehicle. The implications for drivers are in the drive time limitations. The HOS provisions are summarized below.

- *11-Hour Driving Limit:* May drive a maximum of 11 hours after 10 consecutive hours off duty

- *14-Hour Limit:* May not drive beyond the 14th consecutive hour after coming on duty, following 10 consecutive hours off duty. Off-duty time does not extend the 14-hour period

- *Rest Breaks:* May drive only if 8 hours or less have passed since end of driver's last off-duty or sleeper berth period of at least 30 minutes (short-haul exceptions apply)[26]

- *Sleeper Berth Provision:* Drivers using the sleeper berth provision must take at least 8 consecutive hours in the sleeper berth, plus a separate 2 consecutive hours either in the sleeper berth, off duty, or any combination of the two

[26] *395.1(e). [49 CFR 397.5 mandatory "in attendance" time may be included in break if no other duties performed]*

Tunnels

There are three tunnels in Louisiana that prohibit the transport of hazardous material, flammable material, combustible material, and oversize and/or overweight permit loads. These prohibitions require that alternate routes be used for these specific shipments. The tunnels with such restrictions in Louisiana are [27]:

- Harvey Tunnel (Jefferson Parish), US 90 Business
- Belle Chasse Tunnel (Plaquemines Parish), LA 23 Southbound only
- Houma Tunnel (Terrebonne Parish), LA 3040

6.2 Railroads

The six Class I railroads which serve Louisiana are described below.

6.2.1 BNSF Railway Company

BNSF Railway Company (BNSF), a wholly-owned subsidiary of Berkshire Hathaway, Inc., operates over 32,000 route miles in the U.S. and Canada. It operates over 351 route miles in Louisiana with 240 of these miles operating as "joint trackage" with UP Railroad. This section of railroad extends from the Texas/Louisiana state line at the Sabine River near Orange, TX, through Lake Charles and Lafayette to Avondale Yard on the west bank of the Mississippi River at New Orleans. BNSF also has trackage rights on 111 route miles, primarily in northwestern Louisiana and in and around Avondale Yard in New Orleans.

Traffic moving on the east-west joint trackage mainline connects to all of the Class I carriers in New Orleans via the Huey P. Long Bridge and New Orleans Public Belt Railroad (NOPB). Traffic moving into Texas on the western side of the state can connect to all of the 28 states and two provinces in Canada on the BNSF network from Beaumont, TX. BNSF short line connections are listed in **Table 6-8**.

Table 6-8: BNSF Short Line Connections in Louisiana

Short Line	Connections
NOPB	New Orleans
LDRR	Lafayette and Raceland
AKDN	Crowley
TIBR	Kirbyville, Texas

Source: 2015 Louisiana State Rail Plan, CDM Smith

BNSF transports over 120,000 carloads per year through Louisiana. Traffic hauled includes intermodal (trailer and container on flatcar or in a double-stack car), automotive, grain and industrial products. In 2010, BNSF originated 59,268 car loadings and terminated 56,880 in Louisiana. All of its lines in Louisiana are capable of handling 286,000 lb. carloads. The current industry standard for allowable gross weight for rail cars is 286,000 lbs.

[27] *Louisiana Regulations for Trucks, Vehicles and Loads (2013), DOTD*

6.2.2 Canadian National Railway

Canadian National Railway (CN), a publicly traded company headquartered in Canada, owns 20,400 route miles in Canada and the U.S. Its southern region, extending from Rainer, MN to New Orleans and consisting of 7,400 route miles, serves the Gulf of Mexico ports of Mobile and New Orleans and the Mississippi River ports of Memphis and Baton Rouge. It operates 239 miles in Louisiana comprising both main routes and branch lines, as listed in **Table 6-9**. CN's primary points of traffic interchange are noted in **Table 6-10**. CN handles 286,000 lb. car weights across all of its lines in Louisiana and its annual capital expenditures average $23 million per year in the state.

Table 6-9: CN Ownership in Louisiana

Routes	Description
MS/LA state border near Osyka to Kentwood via Hammond to New Orleans	North/South main track
New Orleans to Baton Rouge	East/West line
Hammond to Baton Rouge	East/West line
Baton Rouge north to Slaughter	Branch line currently not in service
Slaughter west to Riddle Zee	Branch line currently not in service
Brookhaven (MS) to the border of Twin (MS) south to Bogalusa & Lee Creek	Branch line in northeastern LA

Source: 2015 Louisiana State Rail Plan, CDM Smith

Table 6-10: CN Interchange Points in Louisiana

Railroads	Interchange Points
BNSF	New Orleans
GLSR	Slaughter*
KCS	New Orleans and Baton Rouge
NOPB	New Orleans
NS	New Orleans
UP	New Orleans and Baton Rouge

*Source: 2015 Louisiana State Rail Plan, CDM Smith *Note: GLSR line is out of service, and track has been removed. The CN branch from Baton Route, to which it connects at Slaughter, is out of service.*

6.2.3 CSX Transportation

CSX Transportation (CSXT), a publicly traded railroad company, operates over 21,000 route miles in the eastern, southern and midwestern U.S. It operates 43 route miles in Louisiana (35 miles owned and eight miles of trackage rights in New Orleans) from the Mississippi/Louisiana state line in the east to the City of New Orleans in the west. CSXT operates over and maintains nearly 140 miles of single main track, other main tracks, yard tracks and sidings in Louisiana as of December 31, 2011. The east- west route connects all of the Class I railroads and the NOPB to the entire CSXT network branching eastward from the Mississippi state line, with primary lines across the panhandle of Florida and to the northeast into Montgomery, Alabama. CSXT handles over 249,000 carloads per year in Louisiana. Carloads include automotive, intermodal, sulfur, chemicals, plastics and other merchandise traffic. All CSXT lines in the state are capable of handling the industry standard of 286,000 lb. loaded car weights.

6.2.4 Kansas City Southern Railway

Kansas City Southern Railway (KCS), a wholly owned subsidiary of Kansas City Southern Industries, Inc. (KCSI), operates approximately 3,500 route miles in a 10-state region serving the central and south central U.S. KCS operates 737 route miles in Louisiana: 673 miles owned, approximately 62 miles operated with trackage rights, and two miles leased. KCS has 40 miles of trackage rights on UP between Baton Rouge and Lettsworth, and 22 miles of trackage rights on CN in the New Orleans area. KCS routes in Louisiana routes are shown in **Table 6-11**.

Table 6-11: KCS Routes in Louisiana

Route	Description
Lake Charles via De Quincy and De Ridder to Shreveport	North - South line
New Orleans via Baton Rouge, Shreveport and northward to Kansas City	Northwest line *Note: KCS operates over UP via trackage rights from Lobdell Junction in Baton Rouge to Torras Junction in Lettsworth.*
Meridian, MS to Dallas, TX via Vicksburg, Mississippi, Monroe and Shreveport	East - West line *Note: The east - west line between Shreveport and Meridian, MS is the Meridian Speedway, LLC (MSLLC). NS, through its subsidiary, the Alabama Great Southern Railway Company, owns a minority interest in the MSLLC while KCS is the majority owner of MSLLC. A KCS mainline connects the MSLLC in Shreveport to Dallas.*
Baton Rouge to Port Hudson	Branch line

Source: 2015 Louisiana State Rail Plan, CDM Smith

KCS serves the Ports of New Orleans, Lake Charles, Baton Rouge, and Natchitoches. KCS's Class I railroad connections are cited in **Table 6-12**. KCS's connections to short lines operating in Louisiana are shown in **Table 6-13**. KCS handles 286,000 lb. car weights across all lines in Louisiana.

Table 6-12: KCS Connections with Class I Railroads in Louisiana

Railroad	Connection
BNSF	Lake Charles and New Orleans via NOPB
CN	New Orleans and Baton Rouge
CSXT	New Orleans
NS	New Orleans
UP	New Orleans, Baton Rouge, Lake Charles, Shreveport, Monroe and Alexandria

Source: 2015 Louisiana State Rail Plan, CDM Smith

Table 6-13: KCS Connections with Short Lines in Louisiana

Short Line	Connection
ALM	Monroe
BRS	Baton Rouge
DSRR	Tallulah
LAS	Gibsland, Pineville, and Sibley
LNW	Gibsland
EACH	Doyline
NOPB	New Orleans
TIBR	De Ridder

Source: 2015 Louisiana State Rail Plan, CDM Smith

6.2.5 Norfolk Southern Railway

Norfolk Southern Railway (NS), owned by Norfolk Southern Corporation, a publicly traded corporation, operates approximately 20,000 route miles in 22 states east of the Mississippi River. NS operates 76 route miles of railroad in the state of Louisiana, owning 72 miles and operating over trackage rights on four miles in New Orleans. The primary NS route in Louisiana is operated by NS subsidiary, the Alabama Great Southern Railway, and runs northeast from the City of New Orleans to Benton, where it crosses the Louisiana/Mississippi state line. NS also operates the former New Orleans Terminal Railroad in St. Bernard Parish and across the "Back Belt" to interchange traffic within New Orleans. The Back Belt is a rail bypass of downtown New Orleans through Metairie.

NS serves the Port of New Orleans and connects with all of the Class I carriers in New Orleans (BNSF, CN, CSX, KCS, and UP), as well as interchanging traffic with NOPB. NS also operates through trains on the Meridian Speedway, LLC (MSLLC), between Shreveport and Meridian, MS by virtue of its minority interest in the MSLLC, and on to Dallas via the KCS. NS handles maximum car weights of 286,000 lbs. on its lines in Louisiana.

6.2.6 Union Pacific Railroad

Union Pacific Railroad (UP), a wholly owned subsidiary of Union Pacific Corporation, operates over 32,000 route miles in 23 states across the western two-thirds of the U.S. UP operates over 1,377 route miles of track in Louisiana west of the Mississippi River. It owns 1,321 miles, including partial ownership of the 240 miles of joint trackage shared with BNSF. UP also have trackage rights over 56 miles on KCS between Lettsworth and Alexandria. Primary routes include those shown in **Table 6-14**.

Table 6-14: UP Rail Lines in Louisiana

Route	Description
Baton Rouge to Livonia to Dequincy then via trackage rights on KCS from Dequincy to Sabine River (state line with Texas)	East - West line *Note: This line continues in Texas serving Beaumont and Houston*
New Orleans to Livonia, Alexandria, Shreveport to Lorraine (state line with Texas)	East - West line *Note: This line continues to Dallas, Texas*
New Orleans via joint trackage shared with BNSF from Iowa Junction to the Sabine River (state line with Texas)	East - West line *Note: This line continues to Beaumont and Houston, TX*
Iowa Junction to Alexandria, Monroe to Muller (state line with Arkansas)	North - South line *Note: This line continues to Pine Bluff, Arkansas and St. Louis, Missouri*
Northwest Louisiana running through Shreveport (crosses Texas / Louisiana border at Logansport and Louisiana / Arkansas border north of Plain Dealing)	North - South line

Source: 2015 Louisiana State Rail Plan, CDM Smith

Other UP routes include:

- Baton Rouge to Addis, a connection to its New Orleans-Livonia-Alexandria-Shreveport route
- Baton Rouge to Lettsworth, thence via trackage rights over 56 KCS route miles to Alexandria

UP's primary Class I connections are shown in **Table 6-15**.

Table 6-15: UP Connections with Class I Railroads in Louisiana

Class I	Connection
BNSF	New Orleans and Iowa Junction
CN	New Orleans and Baton Rouge
CSXT	New Orleans
KCS	New Orleans, Baton Rouge, Lake Charles, Shreveport, Monroe and Alexandria
NS	New Orleans

Source: 2015 Louisiana State Rail Plan, CDM Smith

UP originated 232,445 cars and terminated 194,848 cars in Louisiana in 2011. Recent annual capital expenditures in the state have averaged $56 million with an additional $200 million in expansion capital for 2011 through 2014 to provide new double track and greater network capacity to handle unit trains. UP operates intermodal, automotive, unit and mixed carload trains throughout Louisiana. UP handles maximum car weights of 286,000 lbs. on its lines in Louisiana. UP's short line interchanges in Louisiana are cited in **Table 6-16**.

Table 6-16: UP Interchanges with Short Lines in Louisiana

Short Line	Connection
AKDN	Bunkie, Eunice, and Opelousas
ALM	Monroe
DSRR	Monroe
LDRR	Lake Charles
NLA	McGehee, Arkansas *Note: Expected interchange end of 2012*
NOGC	Westwego
NOPB	New Orleans / Avondale
OUCH	El Dorado, Arkansas *Note: No connection in Louisiana*
Port of Lake Charles Port Rail Link (PRL)*	Lake Charles

*Source: 2015 Louisiana State Rail Plan, CDM Smith *Lake Charles Harbor and Terminal District has formed the Port Rail Link, Inc. ((PRL), a non-rail carrier which now operates the LCH trackage and will receive certain trackage rights from UP (Notice of Exemption filed with Surface Transportation Board on December 2, 2011)*

6.2.7 Local, Switching and Terminal Railroads

The local, switching, and terminal rail lines, also known as short lines, own and/or operate lines abandoned or spun off by Class I carriers. **Figure 6-7** shows all lines in Louisiana that cannot accommodate the industry standard 286,000 lb. weight limits. All such lines in the state belong to small railroads. As noted previously, all Class I railroads in the state can handle this car weight on all of their lines. Therefore, these short line railroads create bottlenecks in the system requiring operational processes to shift cargo and rail cars to allow for the safe movement of rail freight.

Figure 6-7: Lines Incapable of Handling Car Weights of 286,000 pounds

Source: 2015 Louisiana State Rail Plan, CDM Smith

6.2.8 Freight Rail Bottlenecks

Freight rail bottlenecks in Louisiana primarily revolve around weight restricted tracks on key short line and regional railroads (which creates inefficiencies where these operators interchange with the national railroads) and rail operations in congested urban areas (which necessitates slower train operating speeds and contributes to surface street congestion and safety issues). There are also several passenger rail proposals that may have implications for freight rail operations if they are implemented.

Weight Restrictions

Several of Louisiana's short line and regional railroads are weight restricted. These lines are typically limited to the outdated 263,000-pound (263K) railcar standard and therefore cannot handle the 286K loaded railcars that are the standard for Class I railroads. This sometimes creates bottlenecks and inefficiencies where the short line and regional roads interline with the Class I railroads.[28] Shippers that use these railroads must forego the cost savings they would realize if they could load more product onto a single rail car. Key rail lines that are weight restricted include:

- **The Louisiana Southern (LAS) Railroad** near Shreveport/Bossier City transports chemicals and other heavy industrial goods. It suffered extensive water damage to its rail bed and bridges during flooding in the spring of 2016. LAS has been making the necessary repairs and has already spent some $15 million to restore the line to its condition prior to the floods, but this will only bring the line back to 263K capacity. It will cost an additional $13 million to upgrade the line to 286K capacity but LAS has only been able to fund the restoration of its track. There is a paper mill in Hodge that would be able to load more product on each car if the track was upgraded, thereby reducing its shipping costs for moving cargo between Hodge and Gibsland. The DOTD Rail Division is working with LAS to find funding sources for this work such as state economic development funds and federal grant and loan programs. If rail service on this line was lost, hundreds of trucks would be added on two lane rural highways.

- **The Delta Southern Railroad** in the northeast corner of the state was poorly maintained by a previous owner. Continental Railways recently purchased the line from Tallulah (where it exchanges railcars with the Kansas City Southern Railroad) to the Port of Lake Providence. The North Louisiana and Arkansas (NLA) railroad then takes the route into Arkansas where it interlines with the Union Pacific (UP). In 2017 Continental resumed service from Tallulah to Port of Lake Providence where there is an ethanol plant. The line also moves agricultural goods, timber, and aggregate. The absence of this service led directly to economic losses a few years ago when the Port of Lake Providence became silted in. Barges were unable to access the port, rail was not available at the time, and trucking was too expensive for many area shippers. As a result, there was no economical way to ship agricultural products out. Expanded capacity on this line would provide an important back up capability for the agriculture industry.

- **The Timber Rock Railroad**, which runs from the KCS line in the southwest part of the state into Texas, moves gravel, aggregate, and construction materials. Because of weight restrictions and poor track conditions, the railroad must break up trains into two- to three-car groups to move

[28] *The Surface Transportation Board classifies railroads by their annual operating revenues. Class I carriers are the large national railroads that had annual revenues of about $457.9 million or more in 2015.*

them across the tracks. Like the LAS, these products would have to move by truck if the rail wasn't there, leading to accelerated road deterioration and potential safety concerns.

A ban on the use of state funds for rail projects was lifted in 2016. DOTD is setting up an institutional structure for the management and use of any funds that may come from federal grants, public-private partnerships, or other sources.

DOTD is currently looking at options to help fund upgrades to the LAS, potentially including Transportation Investment Generating Economic Recovery (TIGER) grants, Transportation Infrastructure Finance and Innovation Act (TIFIA) money, or Rail Rehabilitation and Improvement Financing (RRIF) loans. All these programs would require localities and private sector stakeholders to demonstrate their support through direct funding, in-kind contributions, or other means.

Rail Relocation Needs

There are two key rail relocation projects in and around New Orleans that, if implemented, would help the flow of rail traffic in the area.

The New Orleans and Gulf Coast Railroad (NOGC) extends about 40 miles from Westwego through Gretna to Ironton and carries a variety of commodities including food products, oils, grains, petroleum products, chemicals, and steel. This alignment carries the railroad through a highly developed area that includes over 280 at-grade rail crossings and some in-street segments, creating congestion on surface streets and contributing to community concerns about emergency vehicle access, noise, and hazardous materials. As a result, a relocation has been proposed that would move the NOGC track off LA 23 in Gretna and make it parallel to the Harvey Canal/Peters Road industrial corridor to the west of the current alignment. The relocated railroad would then rejoin the existing track south of the Belle Chasse Naval Station. These improvements would address community livability and safety concerns, and improve rail freight efficiency (the average speed of trains on the existing alignment is 10 miles per hour, with actual speeds as low as 1 mile per hour in Gretna). The New Orleans Regional Planning Council has completed an Environmental Impact Study (EIS) and is now awaiting a Finding of No Significant Impact (FONSI) from the Federal Railroad Administration (FRA). A second phase of the project would extend the NOGC track another six miles to the Kinder Morgan coal terminal and Plaquemines Parish Port, which would help facilitate expected increases in coal and grain traffic.

The New Orleans Rail Gateway (NORG) is a key series of rail lines through New Orleans that includes the interchange of six national Class I railroads. (See **Figure 6-8**) The NORG was noted in the 2007 National Rail Freight Infrastructure Capacity and Investment Study as a key congestion point on the national rail network. It is the fourth largest rail gateway in the United States, servicing six of the seven Class I railroads and providing inland rail linkages for the Ports of New Orleans and South Louisiana. Several factors conspire to create delays and inefficiencies along the NORG, including antiquated control systems and switches, key choke points such as the Huey P. Long Bridge (a strategic Mississippi River crossing that cannot accommodate a third track) and a single section of track in Metairie that four railroads use to exchange cars, and various grade crossings that contribute to vehicle delays. The NORG

program (Megaproject 85 in the 2015 Statewide Transportation Plan) is evaluating options to solve this problem. Two options (in addition to a no-build alternative) are under consideration:[29]

- The Back Belt option would leave the trains where they are now but would make several improvements aimed at making rail operations more efficient, including grade crossing separations and closures.
- The Middle Belt option would route freight trains out of Metairie to the south and east, through downtown New Orleans along the Amtrak corridor to Chicago, then parallel to I-10 along the same line that Amtrak currently uses to get to Atlanta. This would allow trains to travel at 35 mph rather than being restricted to 15 mph as they are now.

The freight railroads have expressed a preference for the Middle Belt option because it would eliminate all the problematic grade crossings. However, there are some problems with this alignment including capacity restrictions (there is only enough room for two to three tracks on the north side of New Orleans) and the presence of a cemetery near the proposed route. In any event, there are environmental, political, and cost obstacles to completing either route. The most recent cost estimate for the NORG program was about $700 million, but since the study began in 2011 several of the railroads have made improvements with their own funds. As a result, the FRA and DOTD are considering a new study to develop a better understanding of what improvements are still needed and their costs.

Figure 6-8: New Orleans Rail Gateway

Source: DOTD

An overview of rail bottlenecks appears in **Figure 6-9**.

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[29] *Two other options that would have routed trains to the south along the crescent formed by the Mississippi River were deemed to be fatally flawed and are no longer under consideration.*

Figure 6-9: Freight Rail Bottlenecks

Source: DOTD

In the course of the outreach effort for the 2015 State Rail Plan, 11 of the State's 14 short lines reported needs totaling $526.5 million. Of this amount, $205 million (or nearly 39 percent of the total needs) is for upgrading infrastructure to handle heavier railcars. The enhancements are critical to ensuring that shippers located on these lines remain competitive with shippers on Class I lines. All Class I main lines in Louisiana are capable of handling a minimum of 286,000-lb. loaded car weights. An additional $270 million is needed for the New Orleans and Gulf Coast Railway bypass. The remaining $51.5 million in needs pertain to short line highway-rail crossing improvements and closures on Louisiana short lines.

Passenger Rail

In addition to the freight rail bottlenecks discussed above, there are several ongoing passenger rail proposals and studies:

- **Baton Rouge to New Orleans.** This service is currently Louisiana's number one passenger rail priority. The state is working with finance experts to develop a funding plan for this project.

- **Downtown New Orleans to the Airport.** The New Orleans Regional Transit Authority has been studying the potential for passenger rail between downtown New Orleans and Louis Armstrong International Airport for several years. However, now that the airport terminal is being relocated, this project will probably need to be reevaluated.

- **North Louisiana Passenger Service.** This is part of a multi-state planning effort to explore new passenger rail service between Dallas, TX and Meridian, MS. Texas DOT (TxDOT) is currently studying the potential for service from Dallas to Shreveport, while the Northwest Louisiana Council of Governments (NLCOG) is assessing options to extend service from Shreveport to Vicksburg, MS. The next step would be a study of service options from Vicksburg to Meridian, MS, where the line would connect with the existing Crescent service and continue to Atlanta, Georgia and Washington, D.C. Mississippi has not yet begun this study, but Amtrak supports the concept of passenger service from Dallas to Meridian and thinks it would be profitable.

- **Gulf Coast Working Group.** This is a group created under the FAST Act to study reestablishing passenger rail from New Orleans to Orlando. The FRA is leading the study. A recent change of leadership at CSX (over whose tracks such a service would run) has led to a change in attitude toward passenger rail. As a result, the Gulf Coast Working Group is coordinating with the three involved states (Louisiana, Mississippi, and Alabama), the Southern Rail Commission, and Amtrak to look at less costly ways to get the service started, for example, establishing state-sponsored service from New Orleans to Mobile. The goal is to reduce the cost of the proposal from $2.4 billion to $700 million, with $117 million proposed from FRA.[30]

All these services are currently in the planning stages. However, the implementation of one or more of them combined with the potential implementation of the NORG program could lead to additional mingling of freight and passenger trains, potentially creating congestion and operational issues for both passenger and rail traffic.

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[30] *Gulf Coast Working Group Report to Congress, July 2017. Retrieved August 3, 2017 from https://www.fra.dot.gov/eLib/details/L18769#p1_z5_gD_lRC_y2017_m7.*

6.2.9 Safety and Security

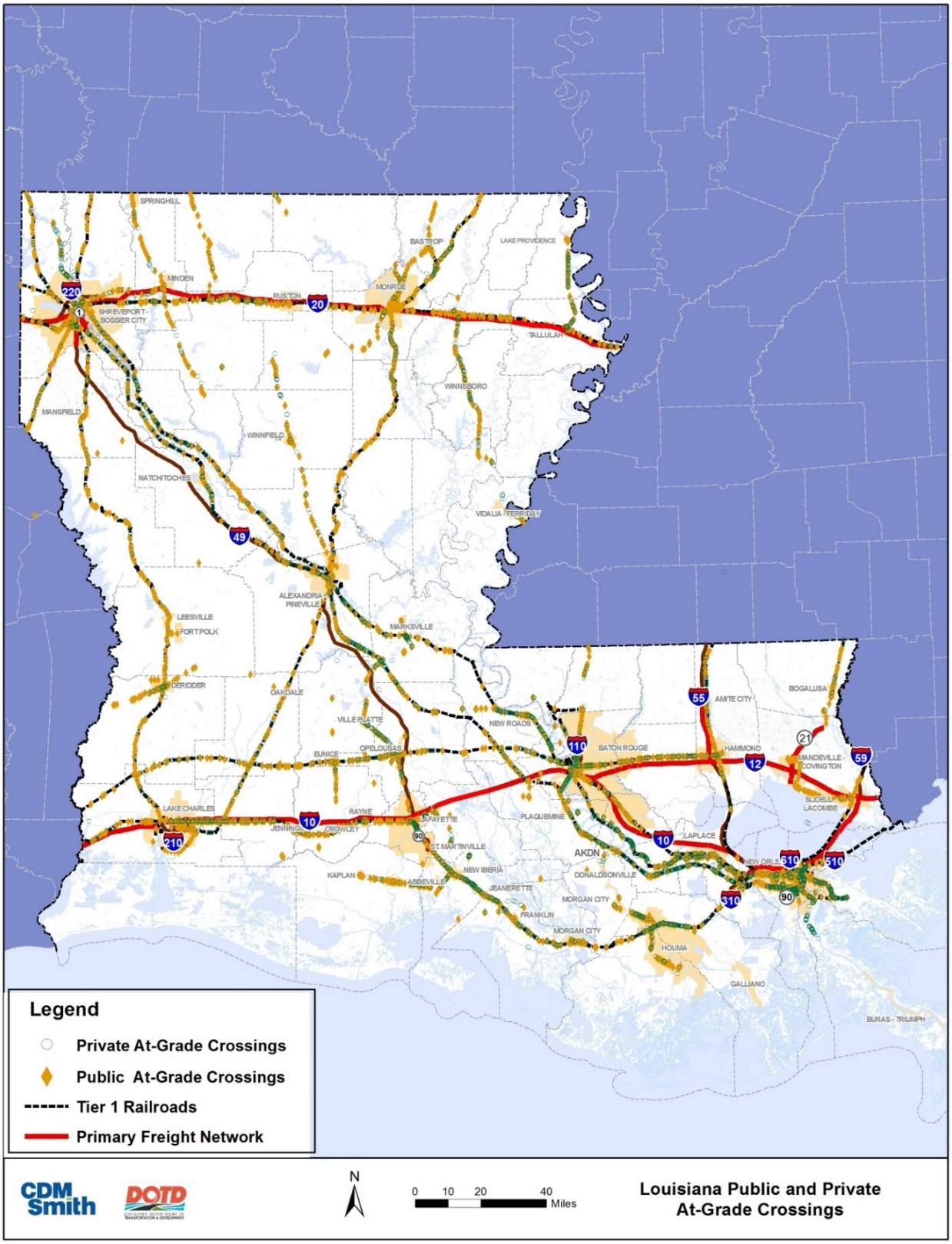
A number of federal and Louisiana state agencies, in concert with railroads and rail operators, continue to make progress with regard to rail safety and security. The following is a summary of these issues and on-going activities in Louisiana.

Rail Safety

Rail safety has historically been and continues to be a priority for the railroads and DOTD because of the high volumes of potentially hazardous materials carried. Although the major railroads have long had their own police and security forces, there has been a concerted effort to identify and eliminate safety threats in recent years. This is particularly true of the potential threat posed by acts of terrorism.

According to DOTD's railroad inventory, there are 2,748 at-grade crossings, of which 49 percent have active warning devices. Of the 2,748 total at-grade crossings, 993 are gated, 411 have flashers without gates, and 1,344 are passive (just signage, no flashing lights or gates). **Figure 6-10** illustrates the location of highway-rail grade crossings in Louisiana.

Figure 6-10: Highway Rail Grade Crossings in Louisiana



Source: Federal Railroad Administration

Rail Accident History

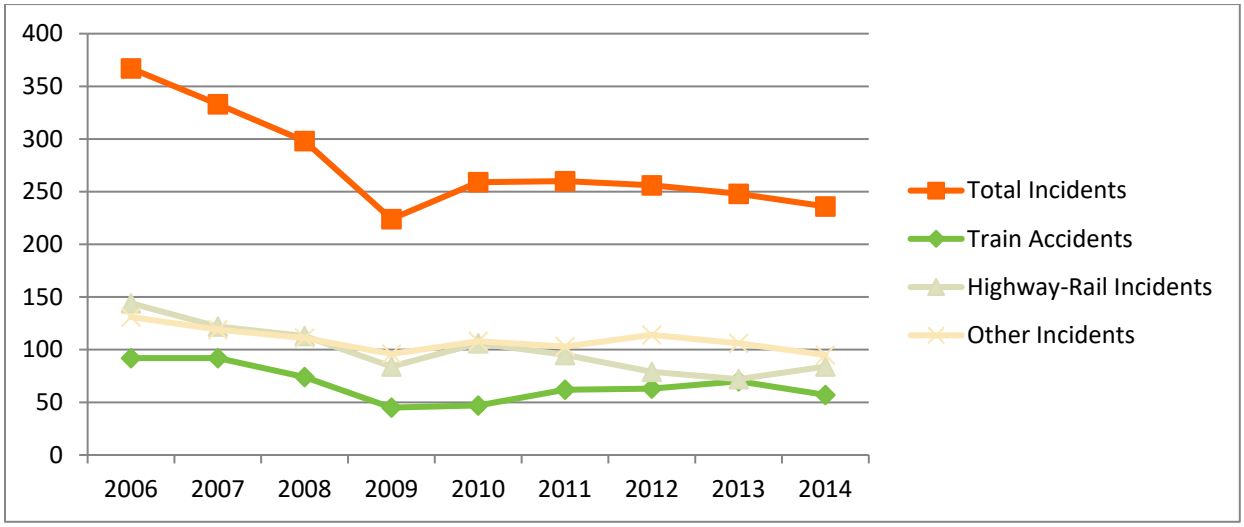
Railroad incidents/accidents from 2006 to 2014 in Louisiana are summarized in **Table 6-17** and illustrated in **Figure 6-11**. These accidents include train derailments, collisions and accidents involving railroad employees or trespassers that occur on railroad property and that result in fatalities, injuries or property damage exceeding an amount established by FRA; and highway-rail grade crossing accidents or incidents. In 2014 there were 13 fatalities at highway/rail grade crossings.

Table 6-17: FRA Reportable Railroad Incidents 2002-2011 in Louisiana

Incidents	2006	2007	2008	2009	2010	2011	2012	2013	2014
Total Incidents	**367**	**333**	**298**	**224**	**259**	**260**	**256**	**248**	**236**
Fatalities	23	22	22	22	25	14	14	13	20
Injuries	210	180	160	133	163	181	174	145	143
Train Accidents	**92**	**92**	**74**	**45**	**48**	**62**	**63**	**70**	**57**
Fatalities	-	-	-	-	-	-	-	-	-
Injuries	2	1	8	1	-	-	6	9	-
Derailments	69	68	52	34	37	42	44	56	47
Highway-Rail Incidents	**144**	**122**	**113**	**84**	**106**	**95**	**79**	**72**	**84**
Fatalities	8	14	15	12	13	8	7	6	13
Injuries	81	57	46	36	67	71	50	31	47
Other Incidents	**131**	**119**	**111**	**95**	**105**	**103**	**114**	**106**	**95**
Fatalities	15	8	7	10	12	4	7	7	7
Injuries	127	122	106	96	96	110	118	105	96

Source: Federal Railroad Administration Table 1.12-Ten Year Accident/Incident Overview by Calendar Year

Figure 6-11: FRA Reportable Railroad Incidents 2006-2014 in Louisiana



Source: Federal Railroad Administration Table 1.12-Ten Year Accident/Incident Overview by Calendar Year

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.

A general downward trend can be observed in all three types of reportable incidents: train accidents, highway-rail accidents, and other incidents. Other incidents are those which cause physical harm to persons that are not train accidents or crossing incidents. Louisiana's decline in FRA reportable incidents mirrors that of the nation as a whole.

Federal and State Roles in Rail Safety

Combinations of federal and state laws describe rail safety provisions. Most safety-related rules and regulations fall under the jurisdiction of the Federal Railroad Administration (FRA), as outlined in the Rail Safety Act of 1970 and other legislation, such as the most recent Rail Safety Improvement Act of 2008. Many of FRA's safety regulations may be found in Title 49 Code of Federal Regulations Parts 200-299.

Rail safety issues generally fall into the following broad categories: employee safety; inspection and maintenance of track, signals, bridges and infrastructure; inspection of locomotives and cars; operating rules and operating practices; radio communications; control of drug and alcohol use; accident reporting; rail-highway grade crossing safety; passenger equipment safety standards; passenger train emergency preparedness; the movement of hazardous materials; the development and implementation of new technology, and other areas specific to the rail industry. The FRA is primarily responsible for enforcement of these federal regulations. DOTD's responsibility for rail safety focuses on the safety and inspection of highway-rail at-grade crossings along its public roads.

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 Louisiana's involvement in rail security procedures.

Federal and State Roles in Rail Security

The primary agencies responsible for security related to transportation modes in Louisiana are the U.S. Department of Homeland Security (DHS) and the Louisiana Governor's Office of Homeland Security and Emergency Preparedness (GOHSEP). These agencies have addressed transportation security largely through identifying critical infrastructure assets, developing protection strategies for these assets, and developing emergency management plans.

The DHS 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

Railroads operating in Louisiana are eligible to apply to the DHS for Freight Rail Security grants.

The AAR, working with DHS and other federal agencies, has organized the Rail Security Task Force. This task force has 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
- Calculation of risks and identification of countermeasures

The private railroad sector maintains communications with the U.S. Department of Defense (DOD), the DHS, the USDOT, the Federal Bureau of Investigation (FBI), and state and local law enforcement agencies on all aspects of rail security.

The lead state agency for rail security in Louisiana is the GOHSEP. The agency maintains a Critical Infrastructure Protection Plan to augment current security and assist facilities deemed critical to the nation and state in reducing their vulnerabilities. Fundamental to the plan is a critical infrastructure list for the state.

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). The STRACNET comprises a 32,000-mile interconnected network of rail corridors and the connector lines most important to national defense. Preserving these rail lines is critical for military equipment, supplies, and personnel. Louisiana's STRACNET system is shown on **Figure 6-12** and includes:

- The KCS line from the Texas/Arkansas border to New Orleans, through Shreveport, Alexandria, and Baton Rouge
- The CN line from the Mississippi line to New Orleans through Hammond
- The NS line from the Mississippi line to New Orleans
- The CXST line from the Mississippi line to New Orleans along the coast
- The BNSF & UP line from the Texas border to New Orleans through Lake Charles and Lafayette

Figure 6-12: Louisiana Area STRACNET Map

Source: Federal Railroad Administration

6.3 Ports and Waterways

Waterways and ports are critical to the movement of freight and overall economy of Louisiana. In 2012, over 296 million tons of water-borne freight was shipped into, out of, and within the state; about 26 percent of all freight moved in Louisiana. This tonnage is expected to increase in the next 25 years.

6.3.1 Ports

Ports are public facilities that enter into leasing arrangements with tenants. Ports are the gateways for international and domestic commerce and they are hubs for Louisiana's fishing and offshore drilling industries. Ports offer a variety of specialized services and accommodate commodities from grains and farm products to supplies for fishing and petroleum industries. Ports are defined by three main categories:

- Deep-draft ports, engaged in foreign commerce
- Shallow-draft (inland) ports mainly engaged in industrial processing activities
- Coastal ports functioning as supply bases to the offshore oil and gas industry in the Gulf of Mexico

Deep-Draft Ports

There are seven deep-draft ports in Louisiana. The five deep-draft public ports located on the Mississippi River waterway segment from Baton Rouge to Head of Passes are among the largest in the nation in terms of tonnage handled. The sixth deep-draft port is located on the Calcasieu Ship Channel. The seventh deep-draft port is the Louisiana Offshore Oil Port located 18 nautical miles offshore from the State of Louisiana.

The Louisiana International Deep Water Gulf Transfer Terminal (the potential eighth deep-draft terminal) is planned as an off-shore transfer point for containers and bulk cargo and will be located about 2.5 miles east of the mouth of the Mississippi River, where the Southwest Pass meets the Gulf of Mexico. If completed, it will be capable of accommodating the largest container ship ("post-Panamax") passing through the expanded Panama Canal. The post-Panamax ships will transfer their cargo to smaller, faster container ships capable of navigating the Mississippi River.

Shallow-draft Inland Ports

There are 17 shallow-draft ports located on inland waterways. Most shallow-draft ports function as industrial parks for water-related industries, in facilitating diversification of the local economy and the creation of jobs in rural communities with limited opportunities.

Coastal Ports

According to the U.S. Energy Information Administration (EIA), in 2013 Louisiana was the nation's third largest producer of natural gas among the 50 states. In April 2015, Louisiana was ranked ninth in crude oil production. In terms of offshore oil and gas production, the Gulf of Mexico accounts for more than 90 percent of the U.S. production. Of the 15 coastal ports (three are under development), there are three major public ports: Port Fourchon, Iberia, and Morgan City. There are also large number of private terminals that operate as supply bases to the critical offshore oil and gas industry in the state.

Issues Affecting Access, Performance, and Capacity

To understand the quality of operations at Louisiana's ports and the principal barriers to improving operations, port operators responded to a survey of current conditions developed by the Plan team. According to the results of the survey and prior discussions with port operators while the Louisiana Statewide Transportation Plan was being developed, port depth and access are the primarily limitations on port capacity and the ability to accommodate cargo. Through the port survey, operators noted the following issues:

- Limited infrastructure to support landside freight handling
- A need for improved intermodal connections for efficient freight movement
- A lack of readiness for the Panama Canal expansion and the larger vessels expected
- Delays in processing permits, grants, CEAs, and MOAs between the ports, state agencies, U.S. Army Corps of Engineers, and other federal agencies is hampering the implementation of needed improvement projects
- Limited port operations hours at the Port of New Orleans require on and off-loading cargo during periods of roadway congestion, contributing further to urban congestion
- Performance issues on Port of New Orleans access routes, specifically at Tchoupitoulas/South Peters Street inbound to port of New Orleans and Annunciation Street outbound, and the roadway/rail grade crossing at the Felicity/Tchoupitoulas intersection. Issues at these locations limit the speed of cargo entering and leaving the port. Recent small scale operational improvements have had limited impact
- Roadway access issues from the Port Caddo-Bossier to LA Highway 3132 and the lack of direct access from the port to the KCS railroad have limited the port's ability to accommodate growth

6.3.2 Waterways

Louisiana's marine transportation system connects the domestic markets and the Midwest via the Mississippi River with the international origins and destinations through the State's ports. The State's navigable waterway network of over 2,800 miles is second only to that of Alaska (Louisiana Marine Transportation System Plan, 2007). The State's network of navigable waterways includes, but is not limited to:

- Mississippi River
- Calcasieu River
- Red River
- Atchafalaya River
- Gulf Intracoastal Waterway (GIWW)
- Ouachita/Black River
- Mermentau River
- Vermilion River
- Barataria Bay
- Houma Navigational Canal

- Bayou Lafourche
- Freshwater Bayou
- North Pass Manchac

The country's two largest waterway corridors, the Mississippi River System and the Gulf Intracoastal Waterway (GIWW), meet in Louisiana. The GIWW's major connection to the Mississippi River is at the Port of New Orleans. For this reason, it is the intersection of waterborne activity between the Gulf Coast, the interior of the U.S., and the rest of the world. More broadly, Louisiana's waterway system provides an important economic and transportation link from the Upper Midwest to the lower Mississippi Valley and the Gulf of Mexico.

6.3.3 Ports and Waterways Bottlenecks

The issues and constraints facing Louisiana ports and waterways are varied and include routine dredging maintenance, aging infrastructure, waterway deepening needs, landside connectivity or operational problems, and cargo handling equipment needs, among others. Bottlenecks are defined as infrastructure or traffic flow issues that hinder performance or capacity of the port or waterway system and its ability to transport vessels and goods.

Port Landside Access and Connectivity

Landside access problems are particularly acute at the Port of New Orleans, where the volume of truck and rail traffic combined with the density of development around the port makes it difficult to address congestion and operational problems with capacity enhancements. The port bottlenecks and related issues are discussed below and illustrated in **Figure 6-13**.

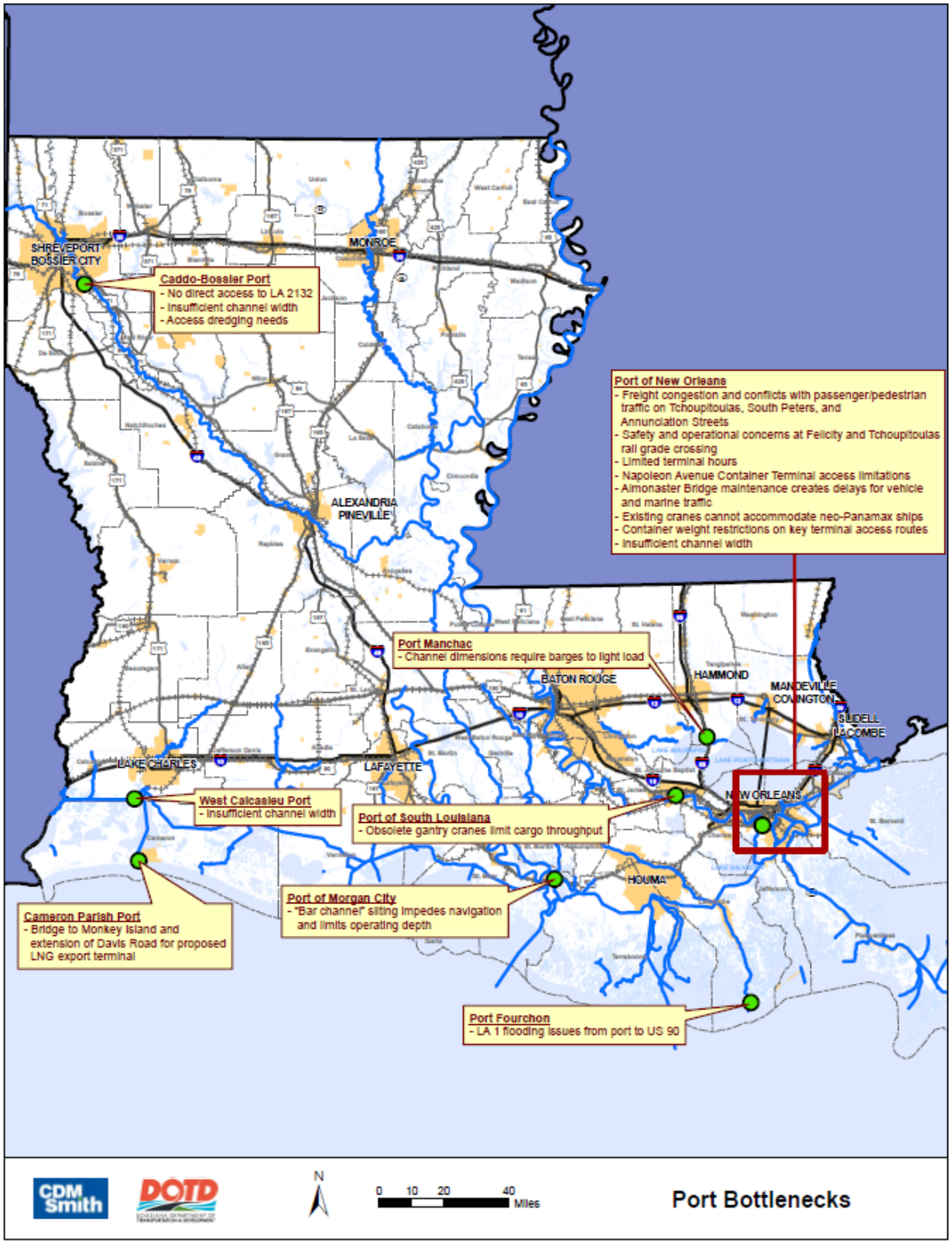
Key landside freight bottlenecks at the Port of New Orleans include:

- **Port of New Orleans Terminal Hours.** The volume of traffic and density of development around the Port of New Orleans has led to operational issues with trucks accessing the port. Although the port has had a terminal appointment system in place since 2003 to help manage truck flows at the Napoleon Avenue Container Terminal, limitations on operating hours at the terminal (which are set by the terminal operators, not the port) preclude the operation of night gates that might help shift more traffic to off-peak hours.

- **Tchoupitoulas Street/South Peters Street Corridor.** These two streets handle significant inbound freight traffic from I-10 that intermingles with the passenger and pedestrian traffic in this dense urban area. The density of development here makes this a difficult issue to fix since capacity improvement would require condemning a significant amount of property.

- **Felicity and Tchoupitoulas Rail Grade Crossing.** This is a problematic grade crossing located in the Tchoupitoulas Street corridor. Since the crossing accommodates heavy freight rail traffic that mixes with truck, passenger car, and pedestrian activity, it presents considerable safety and operational concerns for goods movement.

Figure 6-13: Louisiana Port Bottlenecks



Source: DOTD

- **Annunciation Street Corridor.** Trucks moving freight outbound from the port use this road extensively, and it suffers from similar congestion and conflicts with other users.

- **Access to the Napoleon Avenue Container Terminal.** The port continues to develop this terminal using internal cash flow as well as TIGER funds. As development of Phases 2 and 3 reaches completion, truck access may become an issue. The 2015 Louisiana Statewide Transportation Plan identified megaproject #80 which would extend Leake Avenue to the port, in conjunction with the terminal build out. However, this solution is problematic because the New Orleans Zoo is in the proposed alignment. As a result, the project is not currently progressing and stakeholders are evaluating other alternatives.

- **Almonaster Bridge**. The Almonaster Bridge is a bascule bridge constructed in 1919 that carries two vehicular lanes of Almonaster Avenue and two railroad tracks over the Inner Harbor Navigation Canal. The bridge does not currently accommodate vehicular traffic because the roads leading up to it were destroyed by Hurricane Katrina. However, the bridge (which is owned by the port) requires frequent unscheduled maintenance to maintain access to the port for trains, which also causes delays to marine traffic when the bridge must be kept in the down position. Design of a replacement bridge is complete but construction is awaiting additional funding.

There are additional landside bottlenecks at other ports around the state as well, including:

- The Caddo-Bossier Port has no direct access to LA 3132; trucks must use LA 1 and several other local streets to reach 3132, which provides access to I-49 and I-20.

- Louisiana Highway 1 South from Port Fourchon to US 90 needs to be elevated to mitigate flooding issues (this is megaproject #8a in the 2015 Statewide Transportation Plan).

- In the longer term, if a recently proposed LNG export terminal is built in Cameron Parish, a bridge to Monkey Island and extension of Davis Road will be required for access to the facility.

Cargo Handling Equipment Needs

Two of the state's largest ports need new equipment inside the port gates to help handle expected growth in cargo volumes:

- The Port of South Louisiana requires new gantry cranes to accommodate tonnage growth. The existing cranes are obsolete; new rubber tired gantry cranes would be more mobile and would enable the port to offload vessels on one side of the dock and load them on the other. Although this project was approved under the Port Priority Program, it is awaiting funding.

- The Port of New Orleans expects to receive larger Post-Panamax ships, especially once the Mississippi River deepening project is complete. New cranes are needed there to accommodate these vessels.

Waterway Maintenance Dredging

Routine channel maintenance and disposal of dredge spoils is arguably the biggest issue for many Louisiana ports. Sedimentation necessitates regular dredging of channels to maintain authorized depths and widths. Most of the waterways in the state need funds for maintenance dredging. This work is ordinarily carried out by the Corps of Engineers, but funding is not always available when it is needed due to a persistent federal channel maintenance backlog. According to the American Society of Civil Engineers (ASCE), the Federal Harbor Maintenance Trust Fund (HMTF) has accumulated a balance of $8.41 billion because the fund is frequently used to help offset the federal deficit rather than for its intended use of maintaining navigation depths in the nation's harbors.[31] Although the Water Resources Reform and Development Act (WRRDA) of 2014 included provisions to eventually ensure full use of the HMTF for harbor maintenance, this additional spending will take time to translate into projects. Ports in Louisiana also do not always have sufficient space to dispose of dredged material. Meanwhile, inland waterways in Louisiana often silt up due to lack of funding for maintenance and/or unavailability of dredge equipment.

Dredging-related bottlenecks are summarized below and illustrated in **Figure 6-14**:

- **Mississippi River Crossings**[32] : The federal standard practice for dredge material disposal in the Mississippi River is to dispose in the river, allowing sediment to float downstream rather than being permanently stored at an off-site location. This practice is creating shoaling problems for ships moving upriver. As a result, some areas along the Lower Mississippi struggle to maintain the authorized 45-foot depth. The proposed deepening of the channel from the Gulf to Baton Rouge may require a more permanent solution, perhaps including the acquisition of dredge disposal sites.

- **Mississippi River Mouth:** Silting is a persistent issue at Head of Passes, which is where the main stem of the Mississippi River branches into three directions at its mouth. Head of Passes frequently has depth restrictions, forcing many vessels to wait for high tide to traverse the channel. Heavy rain events routinely dump additional sediment here, requiring vessels to light load or wait for restrictions to be lifted in order to access upriver ports. The 2016 spring rains, for example, reduced the depth of Southwest Pass (the river's main navigation channel) to 42 feet, causing economic losses for grain and petroleum product shippers[33]. Constant maintenance is needed at Head of Passes, but funding and dredges are not always available.

- **Ports:** Many ports have difficulty keeping their access channels clear to the federally-maintained channels. Since the Corps of Engineers typically requires individual ports to conduct dredging operations beyond the immediate authorized channel area, getting the required depth all the way to the dock face can be a challenge. This is an issue at most ports in Louisiana.

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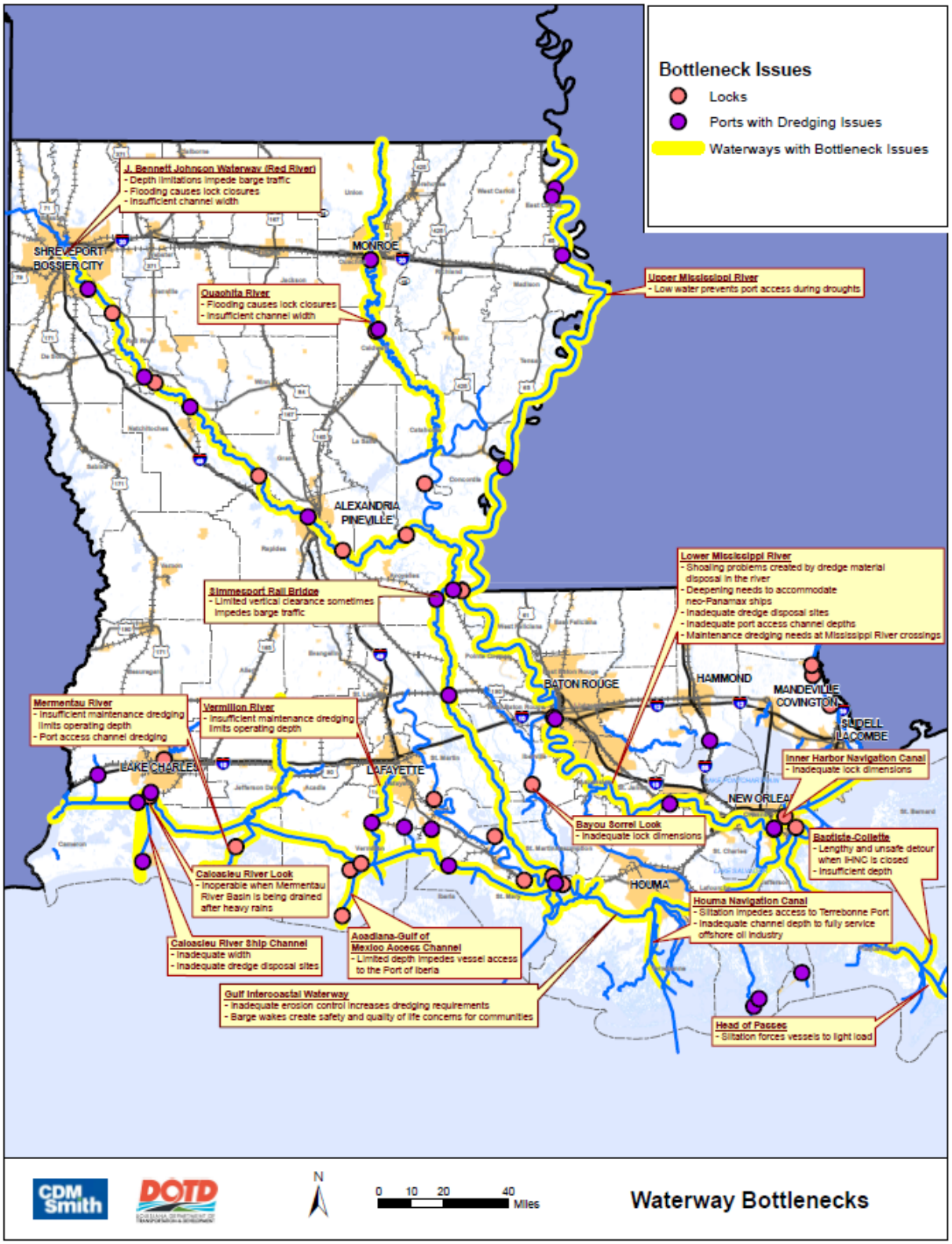
[31] American Society of Civil Engineers, 2017 Infrastructure Report Card, retrieved June 23, 2017 from https://www.infrastructurereportcard.org/wp-content/uploads/2017/01/Ports-Final.pdf.
[32] The term 'crossings' as used here refers to Corps of Engineers maintenance dredging areas along the river, not bridges that cross the river.
[33] Schleifstein, Mark, 'Shippers say Mississippi River sediment again costing them millions,' New Orleans Times-Picayune, April 15, 2016.

Figure 6-14: Louisiana Waterways Bottlenecks



Source: DOTD

- **The Vermilion River and the Mermentau River** are two of several waterways that rely on the Corps of Engineers maintenance dredging to sustain proper channel depth, however funds are usually not available[34].Inbound traffic at the mouth of the Mermentau River must wait for high tide to navigate safely. The Corps has not conducted maintenance dredging at this location since 2009[35]. Although the Corps has proposed FY 2018 maintenance dredging for this channel to reestablish a 15-foot operating depth, a more routine dredging program for this and other navigable waterways would be more cost effective.

- **Liquid Mud ("Fluff"):** The Port of Morgan City, located where the Atchafalaya River meets the Gulf, provides access between the southwestern US and the Upper Mississippi River Valley for the oil and gas and agriculture industries. The port's shipping channel is authorized for 20 feet and includes an inland leg along the Atchafalaya River as well as a 20-mile offshore segment that extends into the Gulf of Mexico. An eight-mile section of the offshore channel known as the "bar channel" routinely silts up with a soupy form of liquid mud called "fluff" that impedes navigation and quickly blocks the channel even after dredging is complete. As a result, the port is currently operating with a nine-foot-deep channel but would like to deepen to 12 feet. The port is sponsoring a demonstration project of a potentially cost effective innovative dredging approach. They want to reduce the density of the "fluff" to enough so that vessels can easily and safely navigate the channel. If the demonstration works, the port would like to assume maintenance of the channel themselves, applying to the Corps for reimbursement.

- **Barrier Island Erosion:** A large portion of the Houma Navigation Canal (HNC) extends into the Gulf of Mexico; the channel runs between two barrier islands that the Louisiana Coastal Protection and Restoration Authority (CPRA) regularly targets for restoration activities. The naturally occurring longshore drift of the coast is from east to west, therefore the HNC is constantly being filled by the eroding adjacent barrier island. Terrebonne Port has proposed several solutions that would further both coastal restoration and navigation purposes, namely trapping the sediment on the island and preventing its erosion into their access channel, the HNC.

- **Erosion Control:** Along the GIWW, erosion control is an ongoing issue. Although not directly related to navigation, erosion control projects can reduce the required frequency and cost of GIWW maintenance dredging as the sediment that erodes from the banks typically ends up in the channel. Barges on the GIWW also frequently wake residential areas, as the rocks placed on the sides of the channel were not designed to absorb the energy from wakes. This is not really a navigation issue, but it does present a safety and quality of life problem for communities along the GIWW.

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[34] Most navigable waterways require maintenance dredging from time to time, so this is an issue that affects virtually every waterway in the state, although not all will necessarily need attention at any one time.
[35]US Army Corps of Engineers, 'Mermentau River,' retrieved June 23, 2017 from http://www.mvn.usace.army.mil/Portals/56/docs/OPS/BUD/Proposed%20FY%202017%20Maintenance%20Dredging%20Activities/Mermentau%20River.pdf.

Deepening and Widening Needs

Channel depth/width and waterside access problems are recurring issues. There are several deepening projects proposed, the Mississippi River Ship Channel (MRSC), the Houma Navigation Canal (HNC), the Acadiana to the Gulf of Mexico Access Channel (AGMAC), and Baptiste-Collette, to name the main ones. However, channel depth/width and access issues affect many ports and businesses around the state. Some ports – especially those serving the offshore oil industry – are losing business to competing states such as Texas because offshore supply vessels and/or deep-water oil rigs are unable to navigate their channels. Channel depth problems also illustrated on **Figure 6-14** are affecting the following ports and channels:

- **MRSC:** The Corps of Engineers has produced a draft feasibility study recommending deepening of the channel to 50 feet from the Gulf to Baton Rouge, to accommodate expected increases in Panama Canal traffic and exports of agricultural products via the Mississippi River system. This would allow access to post-Panamax size ships (i.e., those built to take advantage of the expanded Panama Canal). It will also reduce the need to light-load some vessels and/or unload cargo before they enter the channel. The project is in feasibility study phase with a Chief's report due March 2018. This affects every port on the Lower Mississippi River up to and including the Port of Baton Rouge.

- **AGMAC:** The channel requires deepening so that offshore support vessels can navigate freely to and from the Port of Iberia. However, a Corps re-validation study is required to ensure the channel deepening project is financially viable. The port is executing bulkhead replacements and utility improvements funded with state construction bonds and Port Priority Program funds to prepare for the deepening, but the re-validation study must be done before deepening can begin. The re-validation study cannot begin until the project is included in the USACE work plan.

- **HNC:** The HNC in Terrebonne Parish is used extensively to service oil rigs and move them in and out of the Gulf. The Canal is authorized at 15 feet deep but the Terrebonne Parish Port Commission would like to deepen it to 20 feet to better serve the offshore industry. A Section 203 non-federal sponsor led feasibility study is scheduled to be submitted to the Assistant Secretary of the Army (ASA), Office of Civil Works in the fall of 2017.[36]

- **Baptiste-Collette:** This channel is in lower Plaquemines Parish and connects the Mississippi River to the Gulf of Mexico via the Breton Sound; it was used as an alternative route for barges on the Gulf Intracoastal Waterway (GIWW) when the Inner Harbor Navigation Canal Lock was closed for repairs in 2016. Should the IHNC close again this alternative route is not a safe solution as it lacks the required depth and requires a very long detour in open water to reconnect to the GIWW east of the Mississippi River. The GIWW barge tows are not designed for safe travel in open water. A Section 203 non-federal sponsor led feasibility study to deepen Baptiste-Collette is complete and has been sent to the ASA's Office.

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[36] *Section 203 of the Water Resources Development Act (WRDA) authorizes non-federal interests to undertake feasibility studies of proposed water resources development projects for submission to the Secretary of the Army.*

- **J. Bennett Johnson Waterway (Red River):** The Red River needs to be deepened to 12 feet to accommodate barge traffic. The project successfully navigated the Section 7001 process to be included in the 2017 Report to Congress on Future Water Resources Development Projects. The Red River Waterway Commission (RRWC) will function as the non-federal sponsor; DOTD Chairs the RRWC, by law. Once the project is listed in a WRDA, a Feasibility Study can be initiated with the USACE.

- **Port Manchac's** channel is shallow, long, and narrow. Consequently, many petroleum product barges must be light-loaded to allow for safe navigation. The port would like to straighten and deepen the route for efficiency and safety purposes.

- **Access to ports along the upper Mississippi River (Baton Rouge to Lake Providence)** is not possible when droughts create low water conditions. The Corps does not provide dredging above Baton Rouge, instead leaving it up to local sponsors. This impacts several river ports including Lake Providence, Avoyelles, Point Coupee, Vidalia, and Madison. The Port of Lake Providence also has persistent (non-drought related) low water issues. The 2015 Louisiana Statewide Transportation Plan includes a recommendation (ED19) to maintain a minimum balance of $25 million in Priority 2 of the State Capital Outlay Program for navigation and port-related freight rail capital improvement projects.

- **Channel Widths:** Several navigable channels have the required depth but not the width to ensure safe and efficient navigation. These include the Port of New Orleans, West Calcasieu (Lake Charles area), the Red River, and the Ouachita River. This deficiency is directly related to Corps funding; they will dredge the depth, but not the fully authorized width if the funding is deficient, which is most of the time.

- **Calcasieu River Ship Channel (Port of Lake Charles)**: This channel connects the Port of Lake Charles to the Gulf of Mexico and is a critical link in the nation's petrochemical supply chain, carrying nearly eight percent of the nation's daily oil consumption.[37] The channel has several issues. One is that the channel is not maintained to its fully authorized width, and is not wide enough to accommodate two-way traffic, which creates unsafe conditions as well as costly delays for vessels using the waterway. Exacerbating the problems with width, there are issues with the existing dredge disposal areas. The Corps of Engineers feels that some legal agreements are insufficient, some agreements have not been executed yet, and some disposal areas are full. In addition, the CPRA wants to build a saltwater barrier on a nine-mile stretch of the Gulf Coast that terminates on the west side of the ship channel; coordination is therefore needed among all the users of the waterway. The channel's capacity issues will be exacerbated by the ongoing development of natural gas infrastructure in the area – the channel already serves two of the country's largest liquefied natural gas (LNG) facilities, and a third (the Calcasieu Pass LNG export facility) is proposed where the river meets the Gulf of Mexico.

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[37] *Port of Lake Charles, 'Calcasieu Ship Channel,' retrieved June 27, 2017 from http://www.portlc.com/calcasieu-ship-channel/.*

- **The Simmesport Railroad Bridge** owned by Kansas City Southern on the Atchafalaya River is located on a curve in the river and has limited vertical clearance during high water, making it difficult and unsafe for vessels to navigate. The bridge's moveable middle span does not allow barges to achieve the proper alignment to pass under it safely. (During normal low water operations, there is no need to use the moveable span.) Replacement designs for the bridge have been investigated but were found to present geometric issues for the trains carried by it.

Locks

Louisiana has nearly 5,000 miles of navigable rivers and canals including the Mississippi River, Gulf Intracoastal Waterway, and many others. This extensive system contains 27 locks for navigation. Most lock issues in Louisiana fall into two major categories: lock age, condition, and dimensions; and flooding and operational issues. Like many inland waterway structures around the country, most of the lock structures that facilitate inland waterway commerce in Louisiana have long since outlasted their design life. While most of them continue to operate, many are too small to accommodate modern barge configurations and unscheduled maintenance leads to extensive periods of unplanned downtime. In addition, high water events on key waterways such as the Red River and Ouachita River routinely lead to lock closures which impede commerce and reduce the competitiveness of our inland waterways and ports. Heavy rain increases the likelihood that the locks will be closed for extended periods of time. Lock issues and bottlenecks are further described below and illustrated in Figure 6-14:

- **Lock Age, Condition, and Dimensions.** Several lock structures in Louisiana need rehabilitation or replacement due to their age or small size, but improvements have been elusive for a variety of reasons including funding availability and public resistance.
  - **The Inner Harbor Navigational Canal (IHNC)** in New Orleans was built in 1923 and authorized to be replaced in 1956 due to its dimensions and the inability to handle barge vessel traffic efficiently. According to the Corps, the average transit time for a vessel to use the lock is 16 hours.[38] This is because the barge tow configurations in use today exceed the lock's dimensions, requiring "tripping" (disassembling tows on one side of the lock, pushing barges through one at a time, and reassembling the tows on the other side). The IHNC is the sole method for GIWW users to cross the Mississippi River; it was recently removed from service for several months to replace the gates. The GIWW designated alternate route forces IHNC traffic to go about 100 miles out of the way down the Mississippi River through Baptiste-Collette into open water to get to the GIWW east of the Mississippi River. There is significant public/political resistance to improving the lock. Because the waterway runs through a highly urbanized area in New Orleans and canal bridge operations disrupt local surface street traffic, residents have concerns about the traffic, noise, environmental, and eminent domain impacts of the project. As a result, the project is on hold even though funds are available and the facility has been authorized for replacement by Congress since 1956.
  - **Bayou Sorrel Lock.** A similar issue exists at Bayou Sorrel Lock, about 20 miles south of Baton Rouge. This is the smallest lock on the entire GIWW. Tripping is therefore required for most

[38] *US Army Corps of Engineers, 'Inner Harbor Navigation Canal (IHNC) Lock Replacement,' retrieved June 26, 2017 from http://www.mvn.usace.army.mil/About/Projects/IHNC-Lock-Replacement/.*

barges traversing the facility, leading to average delays of 4.7 hours per tow in 1999.[39] However, the Corps currently regards replacement of this lock as economically infeasible (the Corps generally must use the worst case financial scenario when evaluating lock replacement projects). The Corps is reassessing the project however to determine whether reconstruction would be economically beneficial.

- **Flooding and Operational Issues.** From an operational standpoint, most of the bottlenecks on Louisiana's inland locks are caused by high water events. Flooding often washes sediment and debris downstream which can force the locks to close until the Corps is able to clear them.
  - **J. Bennet Johnson Waterway.** Flooding is a recurring issue on the J. Bennet Johnson Waterway (Red River) locks. Lock closures cause delays to commerce and economic harm to river ports. Caddo-Bossier, for instance, has lost tenants and contracts due to lock closures during high water events on the Red River. Maintenance and repairs to the locks are needed to deal with this issue but are dependent on available funding. It is difficult to get additional operations and maintenance (O&M) funding because the Corps funding methodology focuses on tonnage as a measure of need (rather than, for example, number of vessel calls or economic value of port-related activity).

    The Corps has also proposed reducing lock operating hours of Red River facilities. The region is considering remote control of the locks to increase efficiency and reduce operating costs. Currently, staff are present at half of the locks at any one time.
  - **Calcasieu River Lock.** Flooding presents a different challenge at Calcasieu River Lock, which is the 10th busiest lock in the nation (being used by both commercial navigation and recreational boaters). This lock is inoperable when the Mermentau River Basin is being drained after heavy rains. Although improvements to this facility are a priority for the Inland Waterway Users Board, funding has been difficult to come by. The situation is complicated by the fact that the primary purpose of this lock is to prevent saltwater intrusion into the Mermentau River agricultural areas; therefore, the needs of agriculture interests take precedence over navigation and recreation needs.

6.4 Airports

There are seven commercial service airports in the state that accommodate freight:

- Louis Armstrong New Orleans International
- Shreveport Regional
- Lafayette Regional
- Lake Charles Regional
- Monroe Regional
- Baton Rouge Metropolitan
- Alexandria International

6.4.1 Pavement Conditions

The DOTD Agency of Public Works and Intermodal Transportation has a pavement performance objective "to improve aviation safety related infrastructure for public airports to ensure 93 percent

[39] *US Army Corps of Engineers, 'Bayou Sorrel Lock,' retrieved June 26, 2017 from http://www.mvn.usace.army.mil/About/Projects/Bayou-Sorrel-Lock/.*

meet or exceed Pavement Condition Index (PCI) standards through June 30, 2016". As of Quarter 4 of FY 2012-2013 (the last year data is available) 96 percent of airports met this PCI objective.

6.4.2 Delays

A flight is considered delayed when it arrived 15 or more minutes later than the scheduled time and is calculated for arriving flights only. It is assumed that delays for cargo are similar to delays in passenger aircraft, as reported by the U.S. Bureau of Transportation Statistics. The average percentage of aircraft on time arrival performance for the seven commercial service airports in Louisiana was 75.8 percent between April 2014 and March 2015 compared to the national average of 77.6 percent for the same period.[40] **Table 6-18** shows the on-time performance for each of the seven commercial service airports in Louisiana.

Table 6-18: Louisiana Commercial Service Airport on Time Performance (April 2014 to March 2015)

Airport	On Time Performance
Louis Armstrong New Orleans International	78.96%
Shreveport Regional	72.48%
Lafayette Regional	76.54%
Lake Charles Regional	76.84%
Monroe Regional	74.90%
Baton Rouge Metropolitan	74.07%
Alexandria International	76.66%
Average	**75.78%**

Source: Bureau of Transportation Statistics (BTS), http://www.transtats.bts.gov/OT_Delay/OT_DelayCause1.asp

6.4.3 Aviation Bottlenecks

Freight bottlenecks at Louisiana airports can be broadly categorized into "inside the gates" needs such as longer runways, and intermodal access needs such as direct highway and rail links to expedite cargo flows. Bottlenecks on Louisiana's aviation system are described below and shown on **Figure 6-15**.

On-Airport Freight Needs

Air cargo carriers are increasingly moving towards larger aircraft sizes to achieve economies of scale on key line-haul routes. This has created air cargo bottlenecks at key airports around the state that handle significant cargo volumes. Shreveport Regional Airport, for example, requires a runway extension (to 6,500 feet) to accommodate these larger aircraft, while Lafayette, Baton Rouge, Alexandria, and Lake Charles need larger hangars for them. Air cargo carriers have already broached the subject of flying larger planes – such as Airbus A300s – into these airports.

[40] *Bureau of Transportation Statistics (BTS), Office of the Assistant Secretary for Research and Technology (OST-R) U.S. Department of Transportation (US DOT)*

Figure 6-15: Louisiana Aviation System Bottlenecks

Source: DOTD

Related to the need for infrastructure upgrades to keep up with larger aircraft is the need to upgrade landing systems at some airports. Lafayette and Alexandria would like to upgrade their Instrument Landing Systems, which requires improvements to approach lighting systems and other approach infrastructure. The cost of such an upgrade is typically in the range of $750,000 to $2.5 million.

Monroe Regional, Lake Charles Regional, and Acadiana Regional also report needing new or improved cargo aprons to better handle existing volumes and prepare for the future. The geometric configuration of internal roads at the Acadiana Regional Airport is inadequate and requires modernization for trucks to operate safely and efficiently. Currently, only smaller trucks can operate there because of the height of the crown of the road.

Intermodal Connectivity Needs

Bottlenecks also exist outside of airports on the road links that connect them to key cargo markets. Indirect surface street routes between several airports and the regional/national highway system can hamper truck access and operations. This is a concern at the following Louisiana airports:

- **Acadiana Regional Airport:** Trucks accessing the airport use LA 182, but access points to the airport are limited because of the rail line that runs adjacent to 182, which presents a risk of trucks getting high-centered on the tracks. Acadiana also used to have direct access from US 90 to their airport, however a DOTD project moved the access road about three quarters of a mile away, which reduced freight access. The airport would benefit if a direct access point was reestablished.

- **New Orleans International Airport:** Cargo operations are currently served by Airline Highway/LA 61 on the southeast side of the airport. This is a four-lane highway but it is not built to interstate standards, nor does it provide direct access to I-10. Trucks must pass through the congested intersection at Loyola Drive and I-10 and then navigate surface streets to get to the cargo facilities. As a result, it is about three to four miles to get from the cargo area to the interstate. The 2015 Statewide Transportation Plan identifies a megaproject to reconstruct the Loyola Drive/I-10 interchange which would probably benefit both freight and passenger traffic in the longer term. The project would improve freight flows for trucks that currently must use I-310, US 90, and LA 61.

- **Lake Charles Regional Airport:** Oil and gas industry growth is expected to continue to increase cargo demand at this airport. The airport's location about six miles south of I-210 requires trucks to access it via several surface streets. Local planners and elected officials are exploring options for a direct link to the interstate but this has not advanced beyond the conceptual phase.

- **Lafayette Regional Airport:** Highway access to Lafayette Regional Airport Terminal and Cargo Facilities is an emerging issue that should be considered during the planned I-49 upgrade. This project would provide a 5.5-mile extension of I-49 from I-10 to the airport. Lafayette is Louisiana's third largest cargo airport by landed weight.[41] Currently trucks have to navigate

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[41] *FAA Calendar Year 2015 All-Cargo Landed Weights, Rank Order, retrieved June 12, 2017 from https://www.faa.gov/airports/planning_capacity/passenger_allcargo_stats/passenger/media/cy15-cargo-airports.pdf.*

through several turns and a U-turn on the local street system to get from the interstate to the cargo facilities.

6.5 Pipelines

According to the EIA, Louisiana ranked 3rd in the U.S. in natural gas production, with over 2.36 billion cubic feet produced. Pipelines are the principal means of natural gas transport in Louisiana and the U.S. The EIA natural gas pipeline capacity data show that the majority of the natural gas capacity through Louisiana pipelines enters the state from the Gulf of Mexico, passing through and leaving through the north (Arkansas), west (Texas) and east (Mississippi).

Also in 2014, Louisiana ranked 9th in crude oil production in the U.S. with over 54 million barrels produced in 2014. With 19 operating refineries, Louisiana was second only to Texas in 2013 in both total and operating refinery capacity. Off-shore production accounts for 95 percent of the State's energy production. As a result, water-landside pipeline connections are critical to the State's energy economy.

The Louisiana Offshore Oil Port (LOOP) is the only port in the nation capable of offloading deep-draft tankers. The port consists of three off-shore staging areas used to offload crude tankers and a marine terminal on land. The onshore oil storage facility (Clovelly) is twenty-five miles inland, and connected to the port complex by a 48-inch diameter pipeline. This facility is used as an interim holding area before crude is delivered via connecting pipelines to refineries on the Gulf Coast and in the Midwest. Three pipelines connect the onshore storage facility to refineries in Louisiana and along the Gulf Coast. LOOP also operates the 53-mile LOCAP pipeline that connects LOOP to Capline at St. James, a 40-inch pipeline that transports crude oil to several Midwest refineries.

6.5.1 Safety and Security

The Louisiana Department of Natural Resources (DNR) Pipeline Division regulates the use, end-use, conservation, and transportation facilities for movement of intrastate natural gas; regulates carbon dioxide pipelines and compressed natural gas fueling facilities; and enforces the Coastal Management Division's rules and regulations pertaining to the construction and related activities of pipelines in the Louisiana coastal zone. They are responsible for a comprehensive pipeline safety inspection and enforcement program for both intrastate natural gas and hazardous liquids pipelines, and (as noted in **Section 4.3.9**) they serve as a clearinghouse for information regarding the availability of natural gas. The Division consists of the Pipeline Safety Programs and Pipeline Operations Program.

The Pipeline Safety Program, which has jurisdiction over more than 400 pipeline and master meter operators in the state, reviews and assures safety compliance for over 50,000 miles of intrastate natural gas and hazardous liquids pipelines. In the latest federal audit of the pipeline safety programs, the State of Louisiana received a grade of 100 in both programs, for the last two years.

The Pipeline Operations Program regulates the construction, acquisition, abandonment and interconnection of natural gas pipelines, as well as, the transportation and use of natural gas supplies.

6.5.2 Pipeline Capacity

In 2013, approximately 43.4 billion cubic feet of natural gas passed into Louisiana each day, with over 56 percent entering from the Gulf of Mexico (**Table 6-19**). In the same year, the 28.7 billion cubic feet left

Louisiana into neighboring states, with approximately 70 percent heading to Mississippi. Imports exceeded exports by 14.7 billion cubic feet.

Table 6-19: Natural Gas Pipeline Capacity Into & Out of Louisiana, 2013 (millions, cubic feet per day)

Neighboring State	Into Louisiana	From Louisiana
Arkansas	706	7,903
Mississippi	380	20,251
Texas	17,652	524
Gulf of Mexico	24,689	--
Total	**43,427**	**28,678**
Net of Imports Minus Exports	**14,749**	

Source: U.S. Energy Information Administration, Office of Oil and Gas, Natural Gas Division

6.6 Congestion Influenced by Freight Movements

Most of Louisiana's high capacity roads are designed to accommodate the different operating characteristics of all types of trucks, buses and passenger vehicles. On some roads however, larger vehicles, such as the 53-foot tractor trailer common to long-distance highway freight hauling, affect passenger vehicle movements because of their larger dimensions and longer acceleration and deceleration times. In highly urbanized areas and on smaller state and local roads throughout Louisiana, trucks may struggle to navigate through the highway system. Targeted operational improvements, as well as investments in better information technology and expanded driver education, can all help to minimize the impact of freight movements on the highway system.

6.6.1 Highway System

Interstates

Freight movement by truck relies heavily on the interstate system. The east-west movement of trucks occurs on I-10, I-12, and I-20 while I-49, I-55, and I-59 facilitate north-south truck freight movements. In 2012, 1.2 billion tons of goods moved into, out of, through, and within Louisiana. The highway system accommodated most of these goods with over 569 million tons (44%) shipped by truck. Since freight movement accounts for a large amount of the traffic on the interstate system, freight bottlenecks and congestion caused by freight traffic can have a dramatic impact to the efficiency of the interstate system and impact other users.

A review of actual travel speeds on Louisiana's National Highway System identified that the most severe congestion in the state was focused along several roadway sections on highly traveled portions of I-10 in Baton Rouge and New Orleans. Interstate 10/I-12 in Baton Rouge and a section of I-10 in New Orleans experience the most severe delays, and median peak p.m.travel speeds regularly fall below 15 miles per hour (mph) in the evening peak.

Other interstate sections also experience delays and some roadways on the secondary system that experience consistently slow speeds. In some cases, slow speeds on the secondary system may be an indication of operational issues rather than capacity issues.

Other Highway Facilities

In addition to the interstates, other roadways vital to the movement of freight include US 84 between Natchitoches and Winnfield, and US 190 from Baton Rouge to Opelousas. While these roadways carry

the bulk of the tonnage, other roadways such as those in rural areas have high percentages of truck traffic indicating that they provide critical linkages to the localized economies throughout the state.

As previously noted, highway connector routes are a critical link for goods moved by air, rail and water. Often these connectors or "last mile" segments are under local jurisdictions. Freight movement is generally not a high visibility issue among the public and elected officials, and as such, intermodal connector projects rarely receive their due priority.

Safety

Highway safety is a major focus for DOTD. DOTD tracks crash information to identify safety hotspots and to plan improvements that can make the roadway system safer. Louisiana's *Strategic Highway Safety Plan* (SHSP) outlines safety trends and challenges, and creates a framework for reducing crashes and fatalities from a long-term perspective.

The interaction of trucks and passenger vehicles on the state highway system is a focus area for the Department, and over time, design, and engineering improvements, together with focus from the licensing, regulatory, enforcement and technology perspectives, are expected to reduce fatalities.

According to state crash data, crashes involving commercial motor vehicle are somewhat more likely to occur on rural roadways (55 percent) compared to urban roadways (45 percent). However, nearly three quarters of all fatal crashes occurred on rural roadways. Over half of all crashes occurred on State, Parish, and City/Local roadways, approximately one quarter on Interstate/toll roadways, and approximately one fifth on U.S. Highway roadways; the distribution of fatal and injury crashes by roadway type was similar. The greatest number of fatal, injury, and total crashes involving commercial vehicles occurred on rural state roadways. Improving motor carrier highway safety will reduce highway freight bottlenecks and provide a safer highway system for other users.

6.6.2 Strategies

There are many different categories and types of strategies that can be developed to address congestion and delays caused by freight movements.

General Strategies

- Reduce travel times and increase the reliability of the freight transportation system.
- Reduce the frequency of recurring and non-recurring congestion on the freight system.
- Develop methods to track and improve performance and accountability of the operations and maintenance of the freight transportation system.
- Improve freight system operations and information sharing to benefit regional planning and decision making through improvements in technology.
- Increase freight knowledge and expertise by planners and elected officials throughout the region.
- Implement a performance-based tracking process to determine how well the freight system is functioning.

Policy Implementation Strategies

Establish truck operational plans for downtown areas

Many main highways in downtown areas in urban areas are tasked to serve vehicular, truck, bicycle and pedestrian traffic. A potential strategy is to identify an approach which improves the safety and operation of major downtown roadways for all users. A local task force which includes public and private partners can be developed to provide input on creating an environment that is beneficial to all parties.

Improve signal operations on major truck routes

With limited funds available for adding capacity to roadways through widening projects, maximizing the existing infrastructure by increasing vehicle throughput within the existing corridor is a necessity. Resources could be invested in improving traffic operations on major arterials by improving the signal operations for the corridor. The purpose is to increase travel throughput by reducing delays along congested corridors through the improvement of signal operations. Since the focus is on major freight corridors and these sections of roadways typically cross city and parish boundaries, coordination among local governments and DOTD on the signal timing for identified freight corridors would be necessary.

Improving the wayfinding system between ports and freight corridors

In many areas signage with directional references to port and the local truck routes are available. As freight industry continues to grow, new infrastructure improvements are being constructed to provide last-mile connections with ports. As investments are made on the freight transportation network to accommodate trucks, it's important to display to truck drivers the routes best utilized for freight movement, instead of trucks attempting to take short cuts through residential areas.

Project Specific Strategies

Interstate

There are many strategies to improve freight generated bottlenecks on the interstate system. In areas where a large amount of motor carrier vehicles occurs, potential related strategies include adding additional lanes, developing truck related improvements to interchanges, improving operations through Intelligent Transportation Systems (ITS), and providing additional truck parking to enhance safety.

Improving Acceleration and Deceleration Lanes

One common issue with truck movement is the impact of trucks when entering and exiting the interstate. Because of acceleration and deceleration requirements for trucks, trucks can negatively impact the efficiency of the interstate system. A potential cost savings strategy is to develop projects that lengthen acceleration and deceleration lanes reducing the need to add general purpose lanes. According to Texas A&M's Transportation Institute, improving acceleration and deceleration lanes "…encourage smooth increases in traffic flow, while also increasing speed and volume on freeways and major streets by allowing traffic to adjust to the proper speed in a designated area before merging into

or out of the main traffic lanes."[42] Some states have evaluated the interstate system to identify areas for this low-cost alternative to improve the efficiency of the interstate system.

The Florida Department of Transportation (FDOT) started work in 2016 on the reconstruction of the I-10/US 301 interchange near Baldwin to improve the efficiency of the interchange. The reconstruction project was designed to accommodate increased truck traffic making the northbound U.S. 301 to eastbound I-10 movement. The interchange project included new ramps and bridges to extent the acceleration and deceleration lanes to correct existing deficiencies. Because of these deficiencies, truck traffic often backed up waiting to make the northbound US 301 to eastbound I-10 movement.[43]

Utilizing Intelligent Transportation Systems (ITS)

A potential operational enhancement to improve the efficiency of trucks is to develop a traffic messaging system for communication with trucks to utilize alternative routes on the freight transportation network.

This strategy will assist truck drivers and improve truck movement efficiency. By establishing and supporting technology development and deployment of integrated corridor management and the integration of ITS on the freight transportation network, other interstate users will benefit. In addition to improvements to the interstate, this strategy can be used for last-mile connections with ports and rail heads, and provide alternative routes to truck drivers to avoid congestion.

Increasing the Availability of Truck Parking

According to the American Transportation Research Institute (ATRI), safe and legal truck parking has historically been a major issue for motor carriers and commercial drivers, and is now reaching a critical juncture. State budgets have not been able to keep pace with the need for truck parking and many urban areas have had to eliminate public truck parking spaces. Magnifying this short-fall has been the evolving supply chains and truck operational changes which have moved the truck parking "sweet spot" for many urban areas. ATRI also emphasizes that planning issues such as zoning, property condemnation and "livable communities" have had a major impact on the quantity and location of critical truck parking.[44]

The Jason's Law Truck Parking Survey Results and Comparative Analysis was released in 2015 and confirms that truck parking continues to be a major issue in the United States. The Federal Highway Administration (FHWA) surveyed over 8,000 truck drivers, of which over 75 percent indicated they regularly have trouble finding parking at night.

ATRI found that numerous state DOT representatives believe that truck parking is inadequate – 59 percent of states have truck parking shortages in rest areas and 31 percent have truck parking shortages in private truck stops. An assessment of current truck parking supply and demand shows that major

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[42] *https://mobility.tamu.edu/mip/strategies.php*
[43] *http://www.us301northflorida.com/sites/I10Improvements/Pages/Home.aspx*
[44] *http://atri-online.org/wp-content/uploads/2015/09/Managing-Critical-Truck-Parking-Tech-Memo-1-FINAL-09-2015.pdf*

freight corridors and urban areas have the greatest number of truck parking spaces. However, the demand for truck parking in these locations exceeds the truck parking supply, making major freight corridors and urban areas the locations with the most acute truck parking shortages.

Along the six Interstate routes which span Louisiana are 13 static weigh station facilities with 10 located in pairs at five locations on either side of the highway median. Along Louisiana's Interstate Highway System are 11 rest areas. While each site has available truck parking, a significant demand exists for more truck parking spaces.

Expanding truck parking capacity along Louisiana's interstate corridors will prevent fatigue-related crashes and give commercial vehicle drivers the ability to comply with federal hours of service regulations. In addition, providing additional truck parking will improve the efficiency of the system for other users by reducing illegal truck parking and reducing motor carrier related incidents.

Developing Intersections with Freight Roadway Design Considerations

A potential approach to address the balance between statewide freight needs and local traffic is to develop freight focused roadway designs. This would allow design engineers to consider and implement truck-friendly design solutions that also incorporate local desires by including and addressing multimodal aspects into roadway design. For example, designing intersections along freight corridor to accommodate the turning radii of semi-tractor trailers while protecting pedestrians.

When considering the design of an intersection, right turn movements and treatments should be evaluated for the design vehicle. A smaller radius would maximize sidewalk space and decrease the crosswalk distance, but often require encroachment for trucks and buses. Larger radii are easier for large vehicles to navigate, but can encourage faster speeds and may pose concerns for pedestrian safety.

For areas with a high truck movement, channelization of the right turn movement can provide pedestrian refuge at intersections with long crossing distances and slow vehicle speeds. It is especially useful for freight oriented and diverse activity areas where frequent large trucks require large curb return radii. The use of channelizing islands breaks up the distance a pedestrian must cross into smaller segments. However, these islands can be disorienting for pedestrians who are impaired, and islands are not recommended in community oriented areas.[45]

Adding Passing Lanes on Two-Lane Rural Freight Highways

As previously mentioned, crashes involving commercial motor vehicle were somewhat more likely to occur on rural roadways compared to urban roadways, but these crashes were more likely (three quarters) to be fatal. In addition, approximately one third of all commercial motor vehicle crashes involved a rear end collision (over 30 percent), resulting in 23 percent of all fatal crashes. With the greatest number of fatal, injury, and total crashes involving commercial vehicles occurring on rural state roadways, strategies to improve safety on these rural highways need to be analyzed.

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[45] *http://tampabayfreight.com/freight-roadway-design-considerations/*

One potential strategy is the development of passing lanes on rural two-lane facilities. A list of potential corridors for implementing passing zones could be developed by analyzing rural two-lane facilities with a higher average of truck volumes and/or truck percentage with the number of rear-end and head on collisions involving commercial motor vehicles. Once these corridors are identified, DOTD can work with towns and parishes to develop specific target areas to limit the impact on rural communities.

7. FREIGHT FLOWS

Because of its unique location on the Gulf Coast at the mouth of the Mississippi River and because of its abundance of natural resources, Louisiana moves a large quantity of freight, and it relies largely on roads, waterways, pipelines, and railways to do so.

Louisiana's freight shipments are significant nationally, and compared to other states, Louisiana moves heavier, lower value goods. In 2012, Louisiana moved 1.2 billion tons of goods worth $971 billion[46] from, to, or within the state. Excluding pipeline and through movements, the state moved 891 million tons of goods worth $662 billion. The State's freight movements accounted for 2 percent of national freight movements, which placed it 14th among states in terms of value. In terms of weight, Louisiana's freight movements accounted for 4.4 percent of the national total, placing it 4th among states, behind Texas, California, and Illinois.

Including pipelines, Louisiana's most valuable shipments revolve around the energy industry. In 2012, crude petroleum, gasoline, coal, fuel oils and chemicals accounted for 49.4 percent of all movements. Machinery, motorized vehicles, grains, plastics/rubber, and mixed freight rounded out the top ten.

Excluding pipelines, fossil fuels remain important commodities by value, and the top ten mix spans mostly all of Louisiana's major industries. Chemicals alone accounted for 22 percent of all shipments by value. Petroleum, metals, food and farm products, mixed shipments, transportation equipment, machinery, and secondary traffic round out the top ten.

Louisiana moves lumber and wood products (logs) more than any other commodity by weight. Together wood products, petroleum/coal products, farm products and chemicals accounted for over 62 percent of Louisiana's freight shipments by weight. Non-metallic minerals, food, coal, mixed shipments, building materials (clay/glass/concrete/stone), and crude petroleum/natural gas comprised the rest of the top ten. While these rankings exclude pipeline shipments, the results are very similar when they are included.

Trucks touch nearly every commodity at some point in the chain of supply from source to consumer. However, there is greater modal balance in the primary movement of freight in Louisiana than in most other states. According to the Freight Analysis Framework (FAF) and excluding pipeline shipments, trucks moved 58 percent of all commodities, by weight and by value, in 2012. Including pipelines, trucks moved 44 percent of freight by weight, and 41 percent of freight by value, while waterways moved 26 percent by weight and 14 percent by value. Rail freight, which moves heavy, time-insensitive freight cost-effectively over long-distances, accounted for 7 percent of shipments by value and 13 percent by weight. Air does not figure prominently in terms of overall freight shipments, but it does provide

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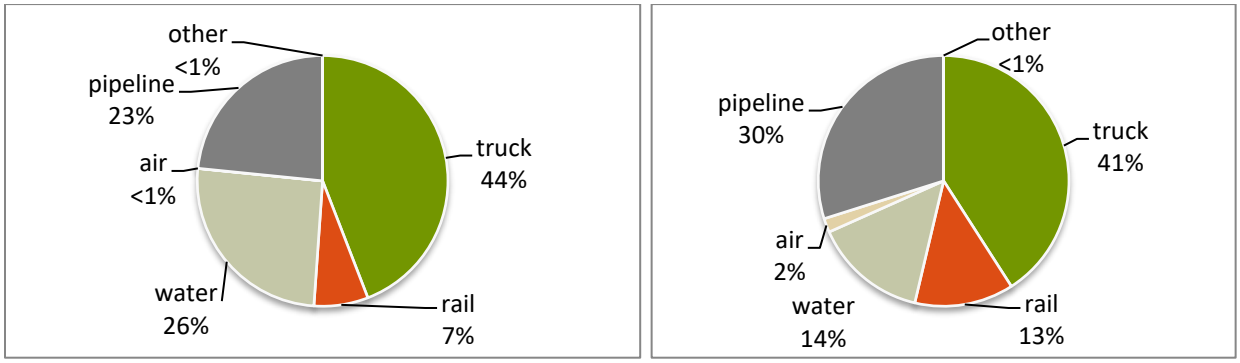
[46] *Global Insight Transearch data, updated with Federal Highway Administration, Freight Analysis Framework, version 3.5. Value in 2012 dollars*

important connections for time sensitive shipments to the Memphis, Tennessee Federal Express distribution facility and to several locations in Canada and Mexico. **Figure 7-1** presents the distribution of freight movements by mode for inbound, outbound and in-state movements, including pipelines.

Figure 7-1: Freight Mode Shares from Freight Analysis Framework (by tons on left panel, and value)



Source: Transearch 2009, updated by 2012 FHWA Freight Analysis Framework and CDM Smith

Freight travels long distances through national, state and local network systems and shippers choose the mode or combination of modes that provide the speed, reliability, and price points they need to be competitive. In 2012, truck shipments traveled the least distance on average and had a large proportion of deliveries that begin and end in the state, as shown by the difference between the overall average shipping distance and the outbound/inbound distances. **Table 7-1** presents the average distance of freight shipments by mode in 2012.

Table 7-1: Average Distance of Freight Shipments, by Mode

Mode	Intrastate	Outbound	Inbound	All
Truck	72	624	669	287
Rail	73	893	987	864
Water	115	846	1,230	716
Air (include truck-air)	-	1,276	1,040	1,117
Pipeline	52	919	973	407
All	54	649	1,044	473

Source: 2012 Freight Analysis Framework

While the discussion of freight flows focuses on trucks, rail, water, air, and pipeline shipments separately, the freight network is in fact a highly interconnected system. Because trucks perform the initial pickup and delivery for most goods and commodities moved by air, rail and water, the connector routes between the freight transportation modes are a critical link to facilitate the transfer of freight. Often these connectors or “last mile” segments are under local jurisdictions.

7.1 Truck-borne Freight

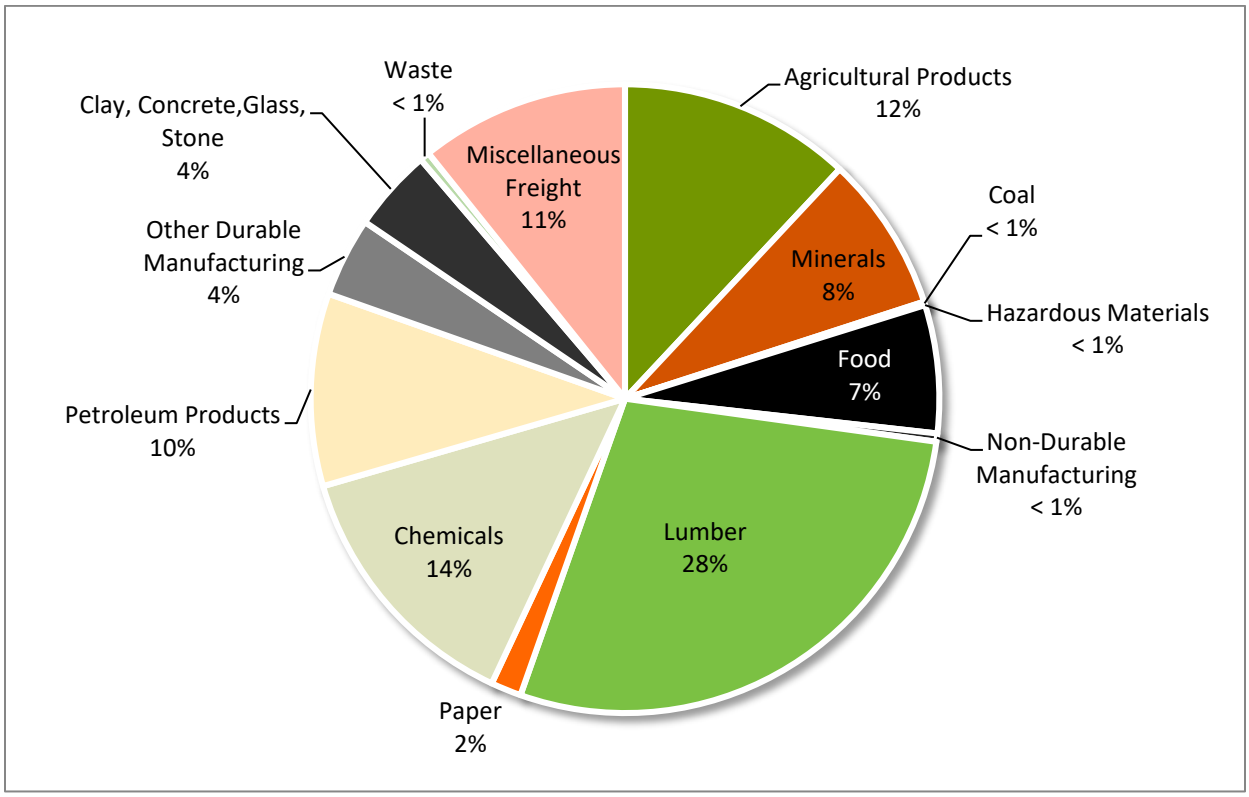
7.1.1 2012 Truck Flows

Freight movement is called the “economy in motion” and trucking is the freight transportation mode which brings the majority of goods and commodities to market. In Louisiana, trucking accounts for approximately 58 percent of the tonnage moved, in, out and within the state (excluding pipelines).

Whether freight is moved by air, rail or water, it is likely to be moved by truck from the point of origin and again by truck to complete the delivery. Trucking is generally affordable and has the advantages of speed and flexibility over the other modes of freight transportation. The performance of the highway system is critical to supporting freight movement. The highway network must be efficient, reliable, and safe for trucking to perform timely goods and commodities movement.

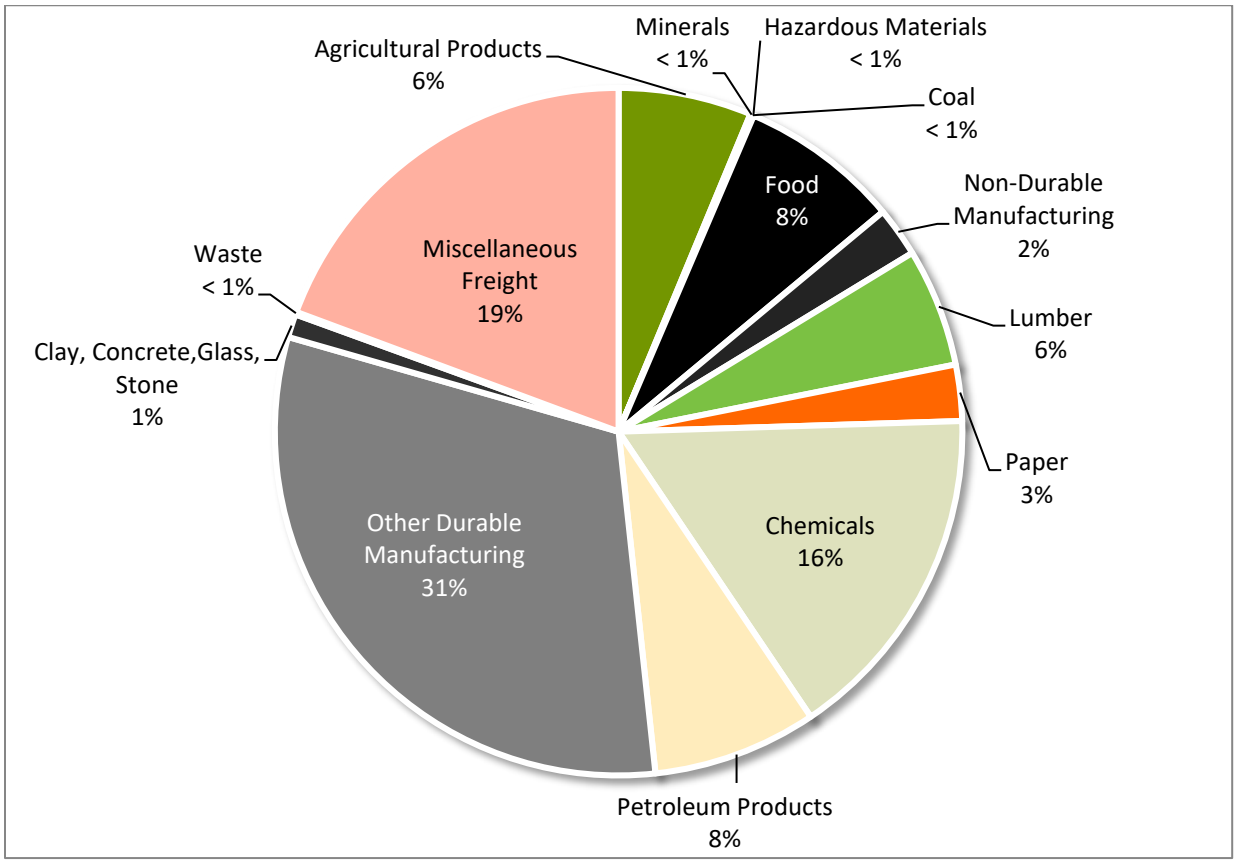
In 2012, trucks hauled 569 million tons of goods worth about $531 billion to, from, within, or through Louisiana. Excluding through movements, the corresponding figures are 513 million tons and $403 billion, respectively. **Figure 7-2** and **Figure 7-3** summarize the value and tonnage of commodities, for all combined exports, imports and internal truck shipments. While lumber was the largest commodity by weight, other durable goods was the largest commodity in terms of value. Other durable goods include finished products such as furniture, equipment, and machinery.

Figure 7-2: Tonnage of Commodities Shipped by Truck To, From or Within Louisiana, 2012



Source: Transearch 2009, updated by 2012 FHWA Freight Analysis Framework and CDM Smith

Figure 7-3: Value of Commodities Shipped by Truck To, From, or Within Louisiana, 2012



Source: Transearch 2009, updated by 2012 FHWA Freight Analysis Framework and CDM Smith

Table 7-2 presents the distribution of truck freight that leaves, enters, or stays within Louisiana, by commodity type, weight, and value. The table shows that the State's roadway system supports the transport of a substantial amount of high-weight, low-value goods including lumber and agricultural products.

Intrastate movements accounted for 31 percent of the tonnage in 2012, and outbound shipments contributed 36 percent. Inbound and through truck tonnages accounted for 23 and 10 percent of the total, respectively (

Figure 7-4). Truck through movements are confined largely to Louisiana's principal arterial system, including I-10, I-12, I-20, I-49, and selected non-interstate east-west routes.

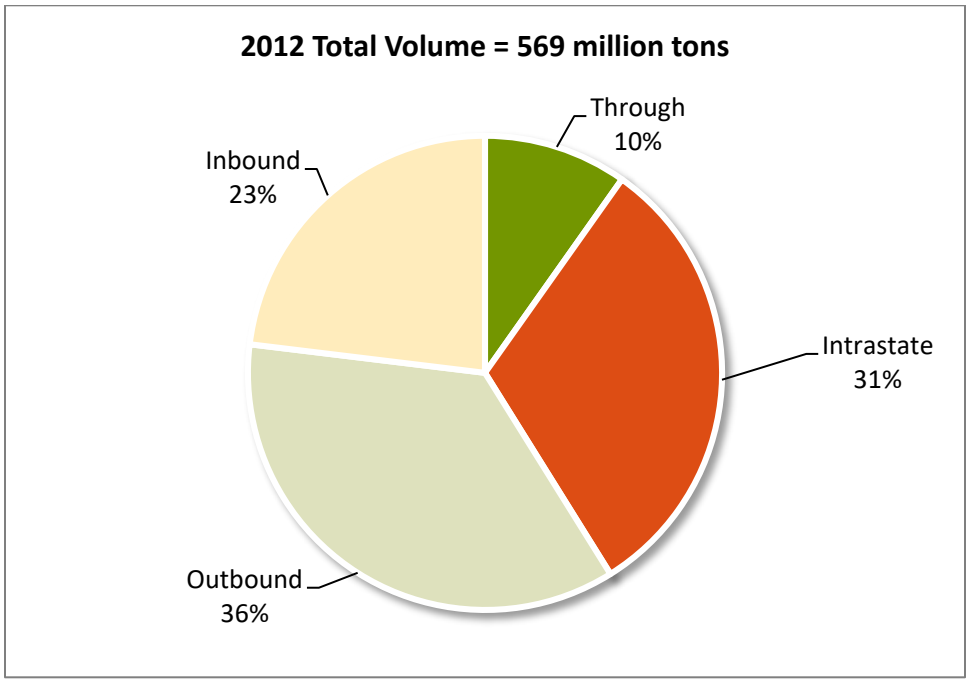
Figure 7-5 presents a map showing the origin of Louisiana truck imports for 2012 and shows the importance of trade with nearby southern states, as well as states in the upper Midwest and California.

Table 7-2: Truck Freight Commodities in Louisiana, by Tonnage and Value, 2012

Commodity	Tons (thousands)	Percent	Value ($thousands)	Percent	Value per Ton($)
Agricultural Products	61,435	12%	$25,221,365	6%	$411
Chemicals	69,522	14%	$64,664,025	16%	$930
Clay, Concrete, Glass, Stone	21,819	4%	$4,422,129	1%	$203
Coal	922.522	<1%	$23,456	<1%	$25
Food	33,767	7%	$30,301,394	8%	$897
Hazardous Materials	6.246	<1%	$167,384	<1%	$26,799
Lumber	144,778	28%	$22,432,901	6%	$155
Minerals	41,266	8%	$496,554	<1%	$12
Miscellaneous Freight	55,152	11%	$77,883,165	19%	$1,412
Non-Durable Manufacturing	2,164	<1%	$9,427,237	2%	$4,356
Other Durable Manufacturing	20,965	4%	$125,471,285	31%	$5,985
Paper	8,061	2%	$10,627,697	3%	$1,318
Petroleum Products	50,838	10%	$31,113,867	8%	$612
Waste	2,598	1%	$490,253	<1%	$189
Total	**513,294**	**100%**	**$402,742,712**	**100%**	**$785**

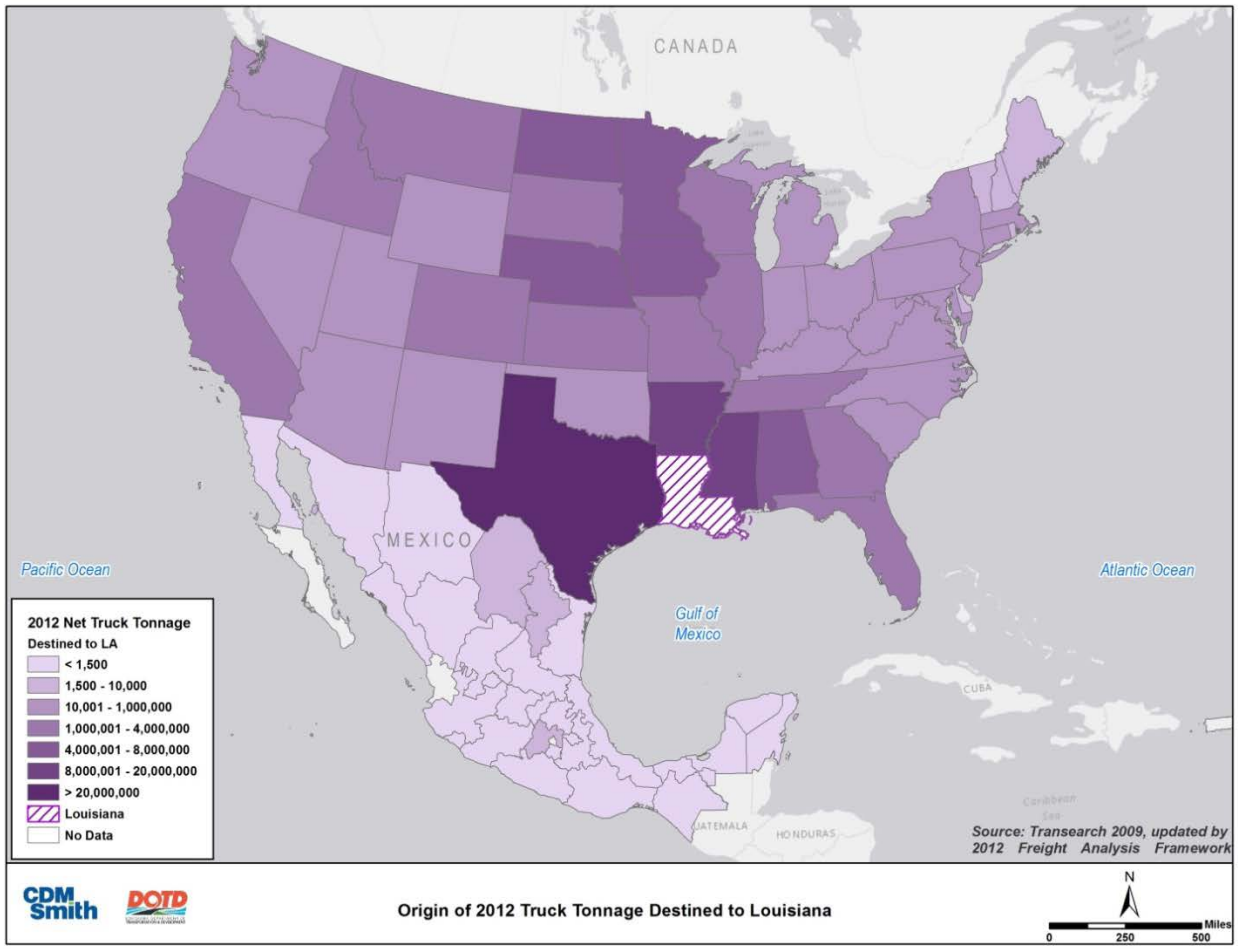
Source: Transearch 2009, updated by 2012 FHWA Freight Analysis Framework and CDM Smith. Excludes through trips

Figure 7-4: Louisiana Truck Tonnage by Traffic Type, 2012



Source: Transearch 2009, updated by 2012 FHWA Freight Analysis Framework and CDM Smith

Figure 7-5: Inbound Truck Freight Shipments by State of Origin, 2012

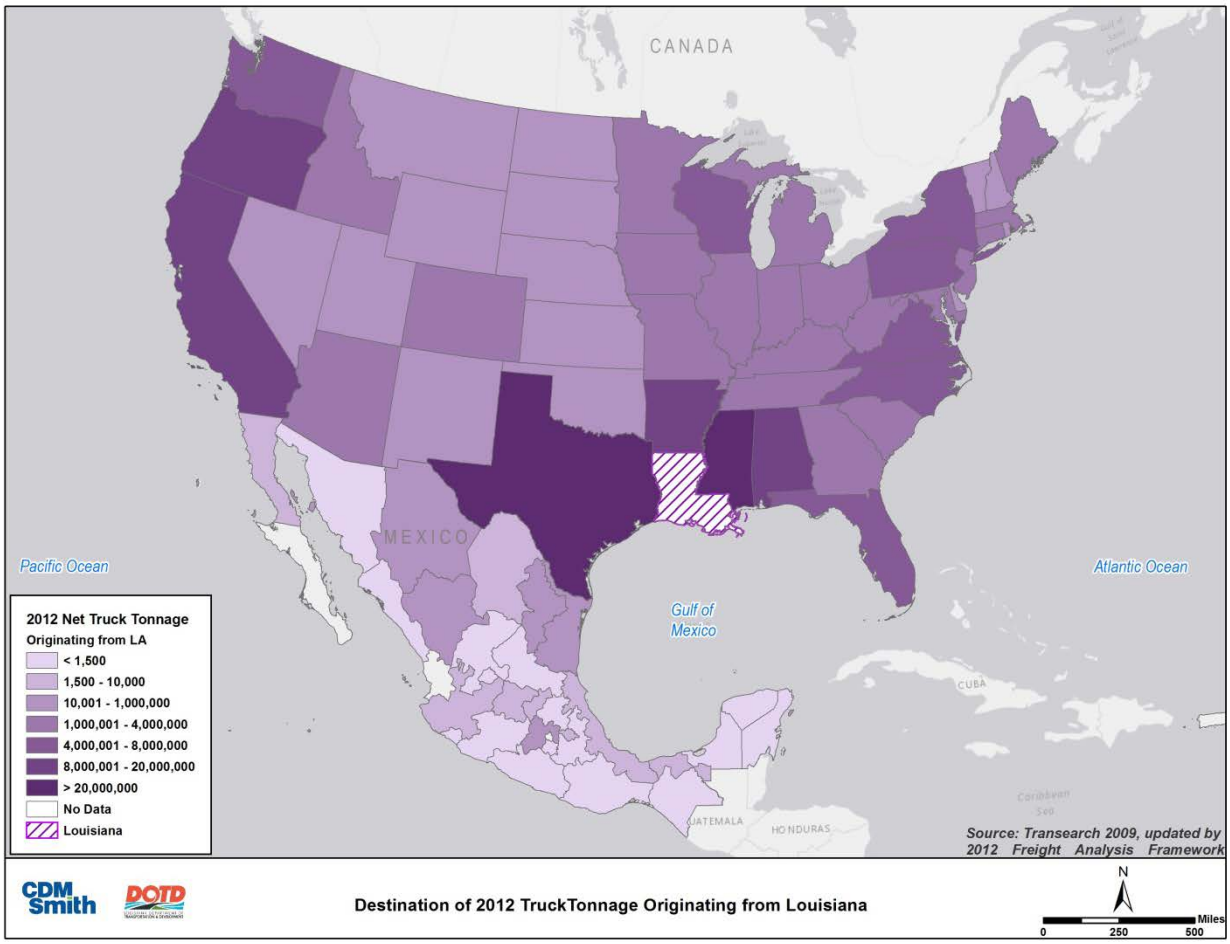


Source: Transearch 2009, updated by 2012 FHWA Freight Analysis Framework and CDM Smith

Louisiana shipped over 203 million tons of goods to other states and countries by truck in 2012. Lumber figured prominently in shipments to the top five regions or states to which the state exported goods. Texas was Louisiana's biggest trading partner as measured by tons of goods exported.

Figure 7-6 presents a map showing the destination of Louisiana truck exports for 2012, and shows a somewhat broader distribution of trading states, including states in the Northeast, the upper Midwest, nearby southern states, the Mid-Atlantic, and states on the Pacific coast.

Figure 7-6: Outbound Truck Freight Shipments by State of Destination, 2012



Source: Transearch 2009, updated by 2012 FHWA Freight Analysis Framework and CDM Smith

Freight movement by truck in Louisiana relies heavily on the IHS. I-10, I-12, and I-20 provide much of the east-west movement for trucks, while I-49, I-55, and I-59 facilitate north-south truck freight movements. This can be seen in **Figure 7-7**, which shows the truck tonnage flows in Louisiana in 2012. Other roadways critical to truck freight are US 84 between Natchitoches and Winnfield and US 190 between Baton Rouge and Opelousas.

According to DOTD's traffic counting program, truck volumes as a percentage of average annual daily traffic generally range from a low of 4-5 percent to a high of 11-12 percent. However, on selected local roads that provide access to freight-intensive locations, such as warehouse and distribution facilities, port terminals, gas terminals and timber or agricultural operations, the percentage of total traffic that is truck traffic can be much higher. Additionally, on particular sections of the interstate system and at certain time of day, such as on sections of I-10 in Baton Rouge and in New Orleans, trucks may comprise a high proportion of total traffic.

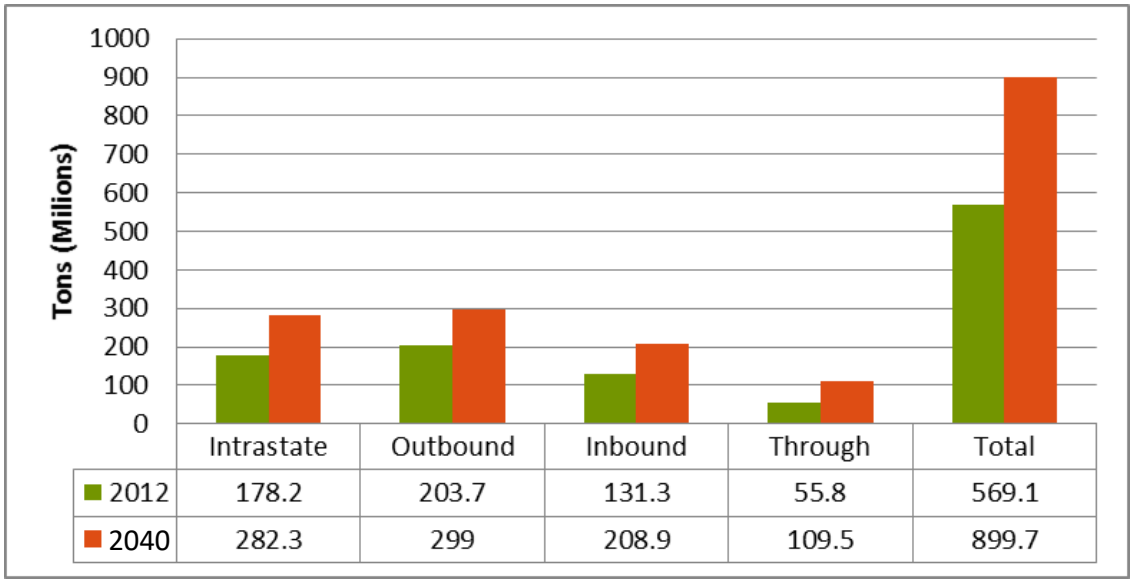
Figure 7-7: Louisiana Average Daily Truck Tonnage, 2012

Source: Transearch 2009, updated by 2012 FHWA Freight Analysis Framework and CDM Smith

7.1.2 Truck Freight Forecasts

Truck borne freight is projected to grow by 58 percent by 2040 (**Figure 7-8**). Inbound truck tonnage is projected to grow by 59 percent, outbound by 47 percent, intrastate by 58 percent, and through truck traffic by 96 percent. These growth rates are determined by a combination of commodity and geographic factors. The growth in intrastate truck volumes is driven by increases in miscellaneous freight (96.7 million tons/151 percent), other durable manufacturing (36.9 million tons/133 percent), chemicals (39.0 million tons/53 percent), and lumber (35.8 million tons/24 percent). These four groups will make up more than 63 percent of the growth in the freight tonnage delivered by truck.

Figure 7-8: Year 2040 Forecasts of Louisiana Truck Tonnages by Traffic Type



	Intrastate	Outbound	Inbound	Through	Total
2012	178.2	203.7	131.3	55.8	569.1
2040	282.3	299	208.9	109.5	899.7

Source: Transearch 2009, updated by 2012 FHWA Freight Analysis Framework and CDM Smith

The major contributors to a projected growth in outbound truck movements are Texas, Mississippi, and the South Atlantic, Pacific, and East North Central regions. These states and regions together will account for 73 percent of the 2040 truck-borne freight shipments from Louisiana to other states. Lumber, chemicals, miscellaneous freight, and petroleum products are forecast to be the largest exports by weight, accounting for 77 percent of total year 2040 exports.

Texas, according to the forecast, will remain Louisiana's biggest trading partner. Chemicals, metals, and other durable manufactured goods will account for 71 percent of all imports from Texas. The West North Central region (Iowa, Kansas, Minnesota, Missouri, Nebraska, North Dakota, and South Dakota) is forecast to send agricultural products and food to Louisiana by truck (accounting for 98 percent of that region's exports), while Mississippi's major exports are forecast to be metals, food, and agricultural goods. Chemicals, food, and other durable manufactured goods comprise 65 percent of the 2040 forecast for the East South Central region's (Alabama, Kentucky, and Tennessee) exports to Louisiana.

Between 2012 and 2040, freight shipments from, to, or within Louisiana are forecast to grow at an annualized rate of 1.7 percent per year, roughly in line with general economic and demographic forecasts (**Table 7-3**). Lumber shipments, while one of the highest growth commodities in absolute

terms, will grow at a lower rate than most other commodity types, while containerized goods (miscellaneous freight) will account for a greater share of overall growth.

Table 7-3: Forecast Truck Freight Tonnage by Commodity, 2012 and 2040

Commodity	Tons (thousands)		Growth per Year	Value ($thousands)		Growth per Year
	2012	2040		2012	2040	
Agricultural Products	61,435	90,463	1.5%	$25,221,365	$32,016,154	0.9%
Chemicals	69,522	102,891	1.5%	$64,664,025	$106,984,984	2.0%
Clay, Concrete, Glass, Stone	21,819	29,527	1.2%	$4,422,129	$6,543,916	1.5%
Coal	922.522	1,443	1.7%	$23,456	$35,922	1.7%
Food	33,767	51,401	1.6%	$30,301,394	$45,065,603	1.5%
Hazardous Materials	6	24	5.3%	$167,384	$591,352	5.0%
Lumber	144,778	179,239	0.8%	$22,432,901	$25,111,584	0.4%
Minerals	41,266	63,011	1.6%	$496,554	$723,436	1.5%
Miscellaneous Freight	55,152	137,762	3.6%	$77,883,165	$178,462,663	3.2%
Non-Durable Manufacturing	2,164	3,213	1.5%	$9,427,237	$14,287,787	1.6%
Other Durable Manufacturing	20,965	41,440	2.7%	$125,471,285	$295,145,499	3.3%
Paper	8,061	12,421	1.7%	$10,627,697	$15,521,694	1.5%
Petroleum Products	50,838	69,475	1.2%	$31,113,867	$39,912,814	1.0%
Waste	2,598	7,880	4.4%	$490,253	$1,333,935	3.9%
Total	**513,293**	**790,191**	**1.7%**	**$402,742,711**	**$761,737,344**	**2.5%**

Source: Transearch 2009, updated by 2012 FHWA Freight Analysis Framework and CDM Smith, excludes through trips

7.2 Freight Rail Flow

7.2.1 2012 Rail Freight Flows

Louisiana plays an important role in the nation's freight rail transportation. In 2012, Louisiana's railroads carried a total of 132 million net tons and moved 2.0 million carloads of goods, for a total value of $146 billion (**Table 7-4** and

Figure 7-9). While through-traffic leads directional movements (51.0 million tons, 32 percent of total), both interstate inbound (39.6 million tons, 29 percent of total) and outbound (36.3 million tons, 27 percent of total) movements are significant. Aside from jobs with railroads, the through-freight has little positive effect on Louisiana's economy, however the system must be able to accommodate the traffic. Most of the through traffic resulted from flows between the markets located in Southwest, Southeast, and Mountain regions.

Inbound, outbound, and intrastate freight flows generate commerce in Louisiana. Outbound freight flows represent products mined or produced in Louisiana or imported through Louisiana that are railed to other states. Inbound freight flows represent commerce that is transported into the state for consumption or value-added processing or export. Intrastate movements represent Louisiana economic

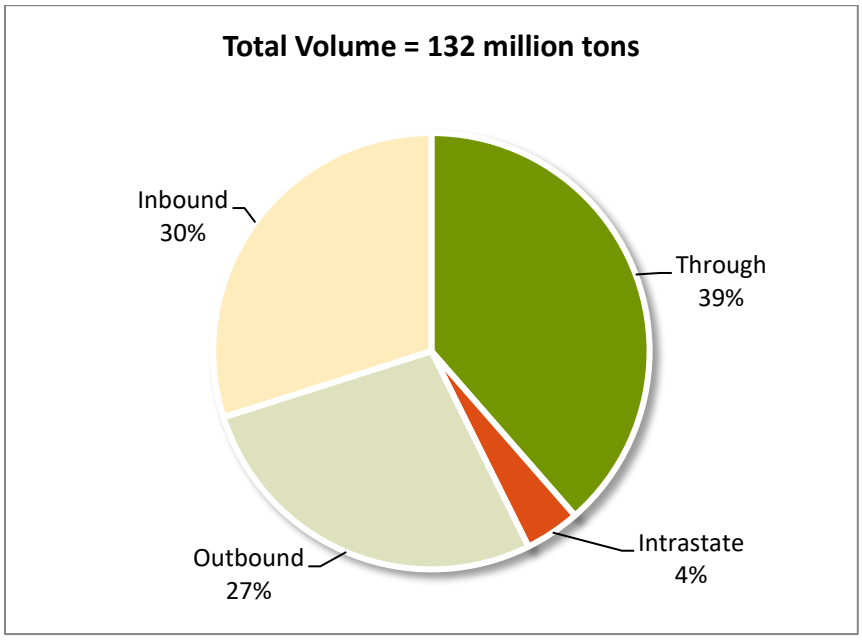
activity or trade at both the origin and termination of the rail movement. Inbound, outbound and intrastate freight flows facilitate commerce by creating employment opportunities for Louisiana's citizens.

Table 7-4: Louisiana Rail Freight by Direction, 2012

Description	Tonnage		Carload		Value ($millions)		Average Value ($/ton)
	Amount	Percent	Amount	Percent	Amount	Percent	
Interstate Inbound	39,566,013	30%	595,878	29%	$35,187	24%	$889
Interstate Outbound	36,312,634	27%	630,003	31%	$57,507	39%	$1,584
Intrastate	5,411,622	4%	65,580	3%	$7,797	5%	$1,441
Through	51,049,570	39%	750,301	37%	$46,344	32%	$908
TOTAL	**132,339,840**	**100%**	**2,041,762**	**100%**	**$146,836**	**100%**	**$1,110**

Source: Transearch 2009, updated by 2012 FHWA Freight Analysis Framework and CDM Smith

Figure 7-9: Louisiana Rail Freight Tonnage by Direction, 2012



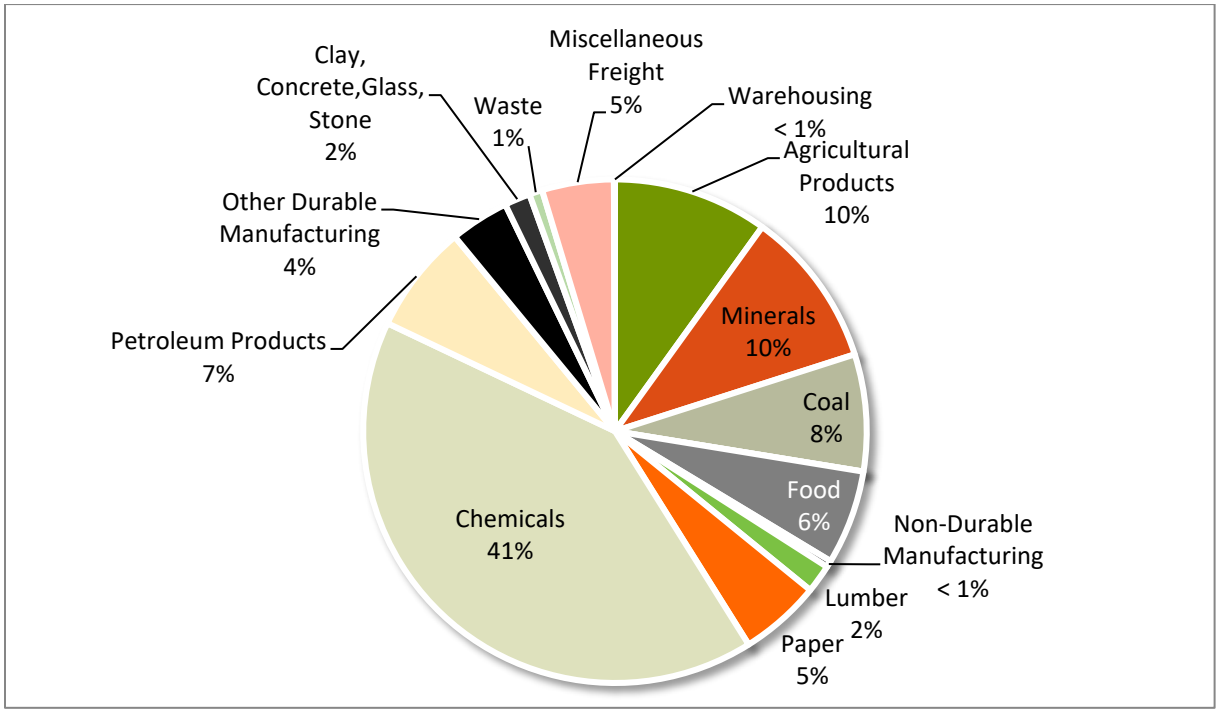
Source: Transearch 2009, updated by 2012 FHWA Freight Analysis Framework and CDM Smith

In terms of value, rail moves relatively high value goods compared to other modes operating in Louisiana. In 2012 Louisiana shipped more goods out of state than it imported ($57.5 million vs. $35.2 million) and the value per ton of outbound goods was considerably higher ($1,584 vs. $889). Intrastate freight represents commodities that flow between parishes within Louisiana. Such intrastate rail movements account for only 4 percent of the total tonnage of rail shipments.

Products involved in manufacturing processes, chemicals and minerals, account for over 51 percent of all goods moved, by weight. By value, chemicals, miscellaneous freight, durable goods (such as machines

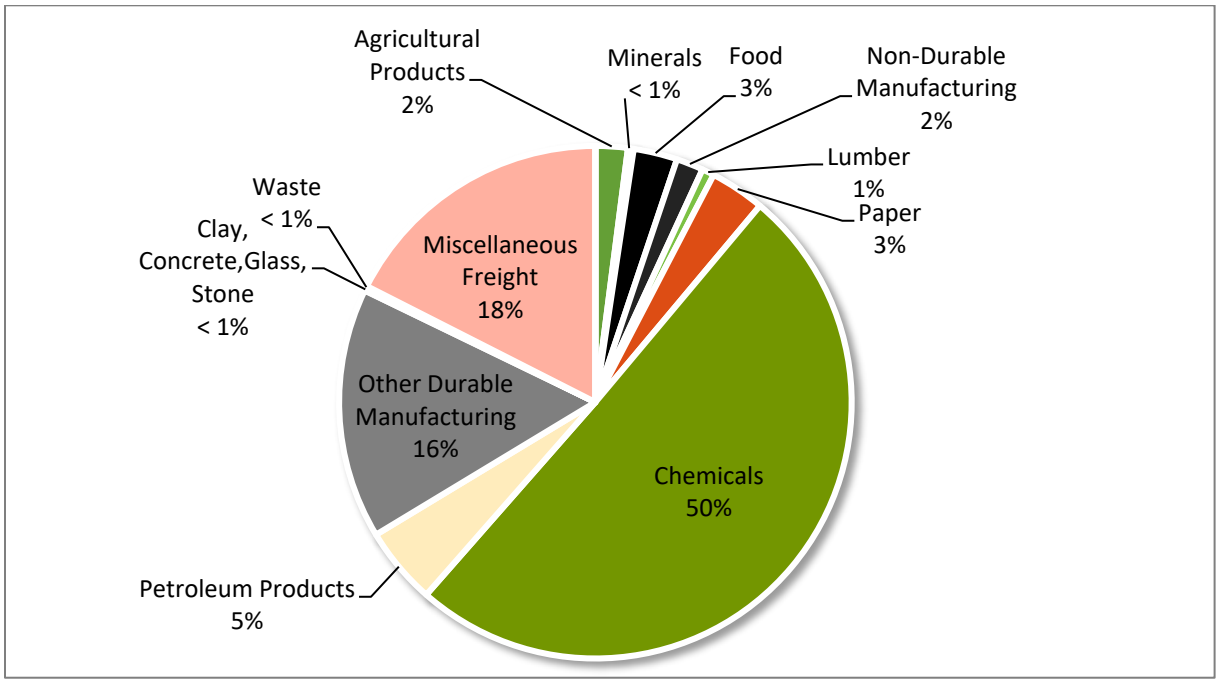
and large household appliances) and petroleum products account for 56 percent of all freight moved in Louisiana. **Figure 7-10** and **Figure 7-11** summarize the value and tonnage of commodities, for all combined exports, imports, and internal rail shipments in Louisiana.

Figure 7-10: Rail Tonnage by Commodity, 2012



Source: Transearch 2009, updated by 2012 FHWA Freight Analysis Framework and CDM Smith

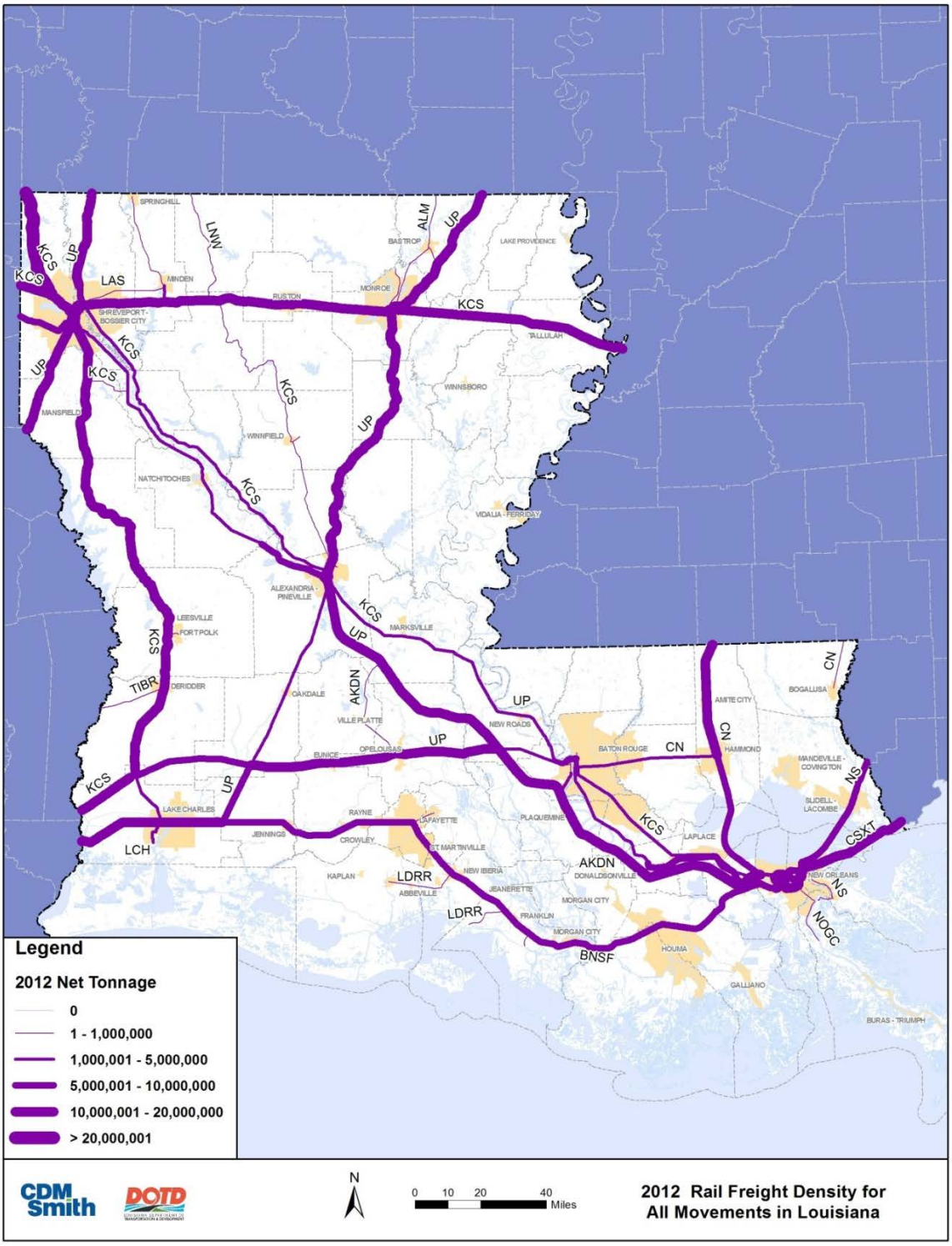
Figure 7-11: Rail Value by Commodity, 2012



Source: Transearch 2009, updated by 2012 FHWA Freight Analysis Framework and CDM Smith

Tonnage densities handled on Louisiana rail lines are shown in **Figure 7-12**. The most utilized rail corridors include the UP between Alexandria and the Arkansas border; the NS, CSX, CN, and KCS radiating from New Orleans; and the KCS and UP lines that provide access to Shreveport.

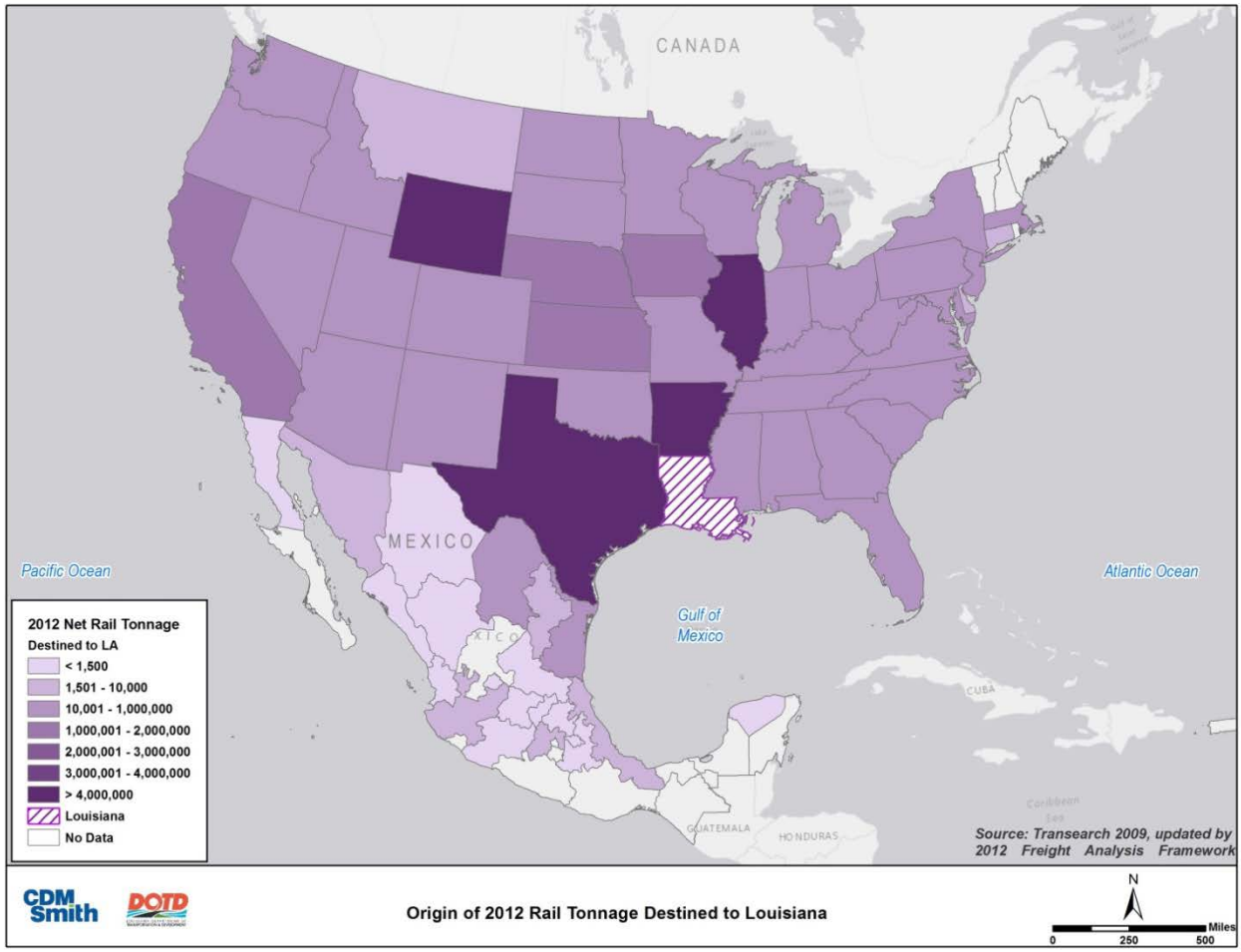
Figure 7-12: Total State Rail Freight Density, 2012



Source: Transearch 2009, updated by 2012 FHWA Freight Analysis Framework and CDM Smith

Major inbound tonnages in 2012 are shown by state of origin in **Figure 7-13**. Texas shipped 7.5 million tons of rail freight into Louisiana, led by chemical products. Arkansas-originating tonnage of 6.4 million tons is dominated by nonmetallic minerals. Coal is the major import from both Wyoming and Illinois. Farm product exports from Iowa, Nebraska and Kansas each exceed 1.0 million tons. Most shipments from California are containerized, and most likely originate from the Port of Long Beach.

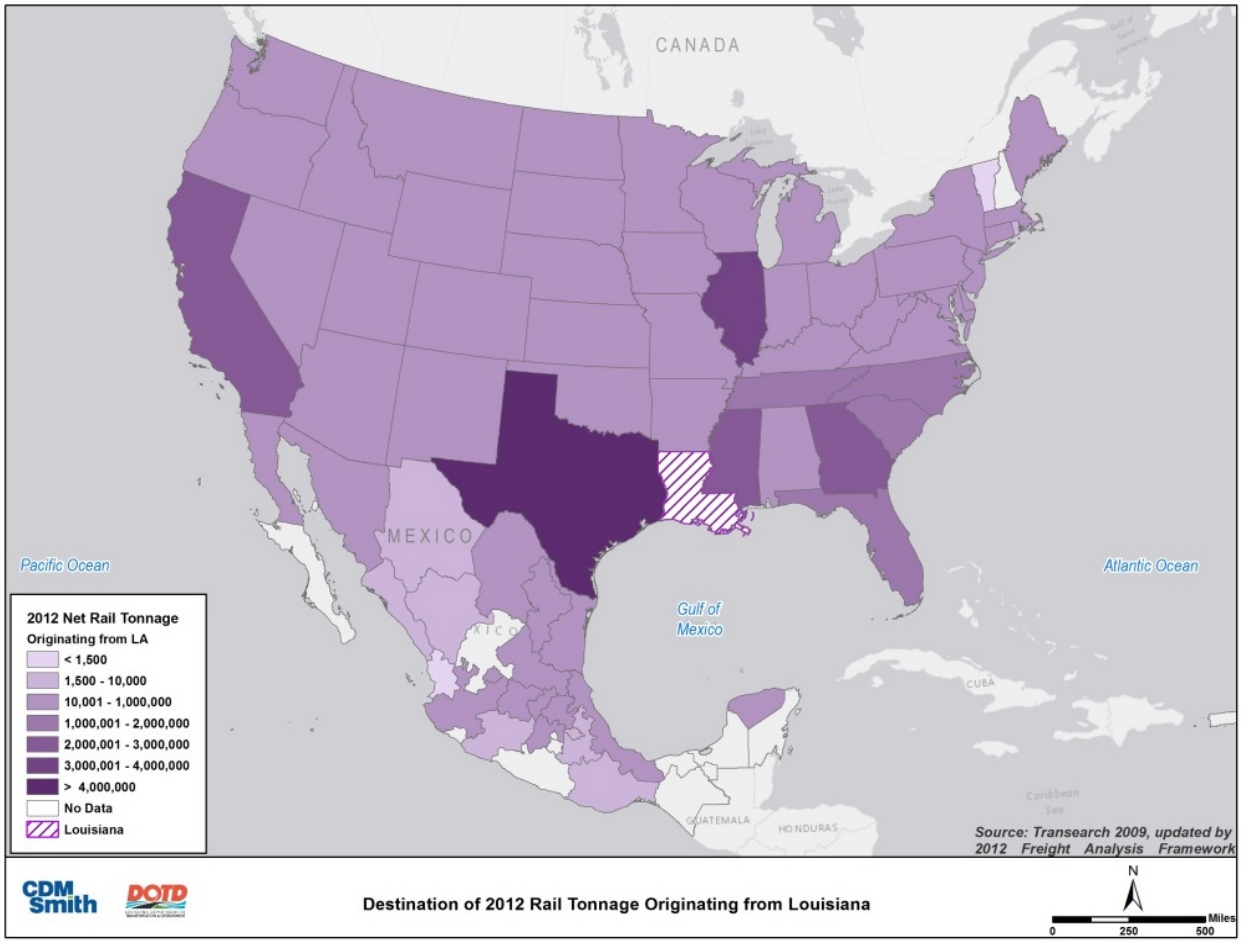
Figure 7-13: Origin of Inbound Louisiana Freight



Source: Transearch 2009, updated by 2012 FHWA Freight Analysis Framework and CDM Smith

As shown in **Figure 7-14**, Texas was also the major recipient of Louisiana rail shipments led by chemical/allied products. Other notable Texas-bound products included petroleum/coal products, pulp paper products, and food/kindred products. Chemical/Allied products were also shipped to Illinois, Georgia, Mississippi, Tennessee, and North Carolina. Shipments to Texas, Illinois, Georgia, California, Mississippi, Tennessee, and North Carolina accounted for 50 percent of all Louisiana outbound rail shipments by weight in 2012.

Figure 7-14: Destination of Outbound Freight from Louisiana, 2012

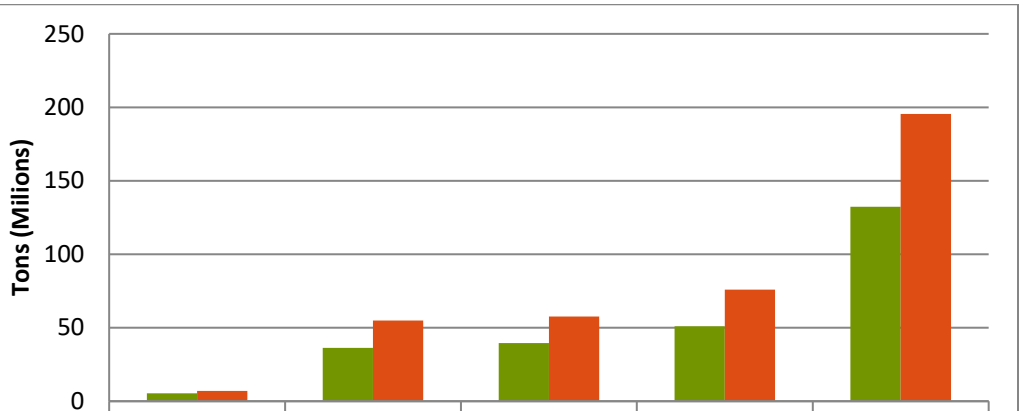


Source: Transearch 2009, updated by 2012 FHWA Freight Analysis Framework and CDM Smith

7.2.2 Rail Freight Forecasts

Inbound freight rail movements are forecast to grow 45.7 percent from 39.6 million tons in 2012 to 57.7 million tons in 2040, an average annual growth rate of 1.5 percent. Similarly, outbound freight movements are forecast to grow 51.2 percent from 36.3 million tons in 2012 to 54.9 million tons in 2040 – an average annual growth rate of 1.6 percent. These inbound and outbound, as well as intrastate and through movements, are summarized for years 2012 and 2040 in **Figure 7-15**.

Figure 7-15: Forecast Rail Freight Tonnage by Direction, 2012 and 2040



	Intrastate	Outbound	Inbound	Through	Total
2012	5.4	36.3	39.6	51	132.3
2040	7	54.9	57.7	75.9	195.5

Source: Transearch 2009, updated by 2012 FHWA Freight Analysis Framework and CDM Smith

A summary of all directional commodity movements in **Table 7-5** suggests slight decreases in coal and petroleum/coal movements. Conversely, many commodity movements are forecast to double (e.g., container shipments, transportation equipment, scrap metals), although in absolute terms their growth is relatively minor compared to chemicals, coal and farm products. In total, year 2012 movements of 132.3 million tons are forecast to rise 47.8 percent, to 195.5 million tons by 2040.

Table 7-5: Forecast Rail Freight Tonnage by Commodity, 2012 and 2040

Commodity	2012		2040		% Change	
	Tons (mil)	Share	Tons (mil)	Share	Total	CAGR
Chemicals or Allied Products	40.1	30.40%	52.6	26.90%	31.07%	1.05%
Coal	23.7	18.50%	21.8	11.10%	-7.84%	-0.31%
Farm Products	13.2	9.90%	20.6	10.50%	55.84%	1.72%
Nonmetallic Minerals	10.8	8.40%	18.6	9.50%	71.53%	2.10%
Food or Kindred Products	8.3	6.20%	15	7.70%	79.68%	2.28%
Petroleum or Coal Products	7.9	5.70%	7.2	3.70%	-8.34%	-0.33%
Pulp, Paper or Allied Products	7.0	4.90%	12.4	6.30%	77.90%	2.24%
Primary Metal Products	4.8	3.60%	9.3	4.70%	93.50%	2.57%
Misc. Mixed Shipments (Containers)	4.8	3.80%	13.1	6.70%	172.30%	3.93%
Transportation Equipment	2.8	2.10%	8.5	4.30%	203.67%	4.36%
Clay, Concrete, Glass, Stone	2.5	1.80%	4.6	2.30%	84.27%	2.38%
Lumber or Wood Products	2.2	1.60%	4	2.10%	84.76%	2.39%
Waste or Scrap Materials	1.3	0.90%	2.8	1.40%	122.01%	3.12%
Other	3.0	2.10%	5.2	2.70%	74.46%	2.16%
Total	**132.3**	**100.00%**	**195.5**	**100.00%**	**47.73%**	**1.51%**

Source: Transearch 2009, updated by 2012 FHWA Freight Analysis Framework and CDM Smith

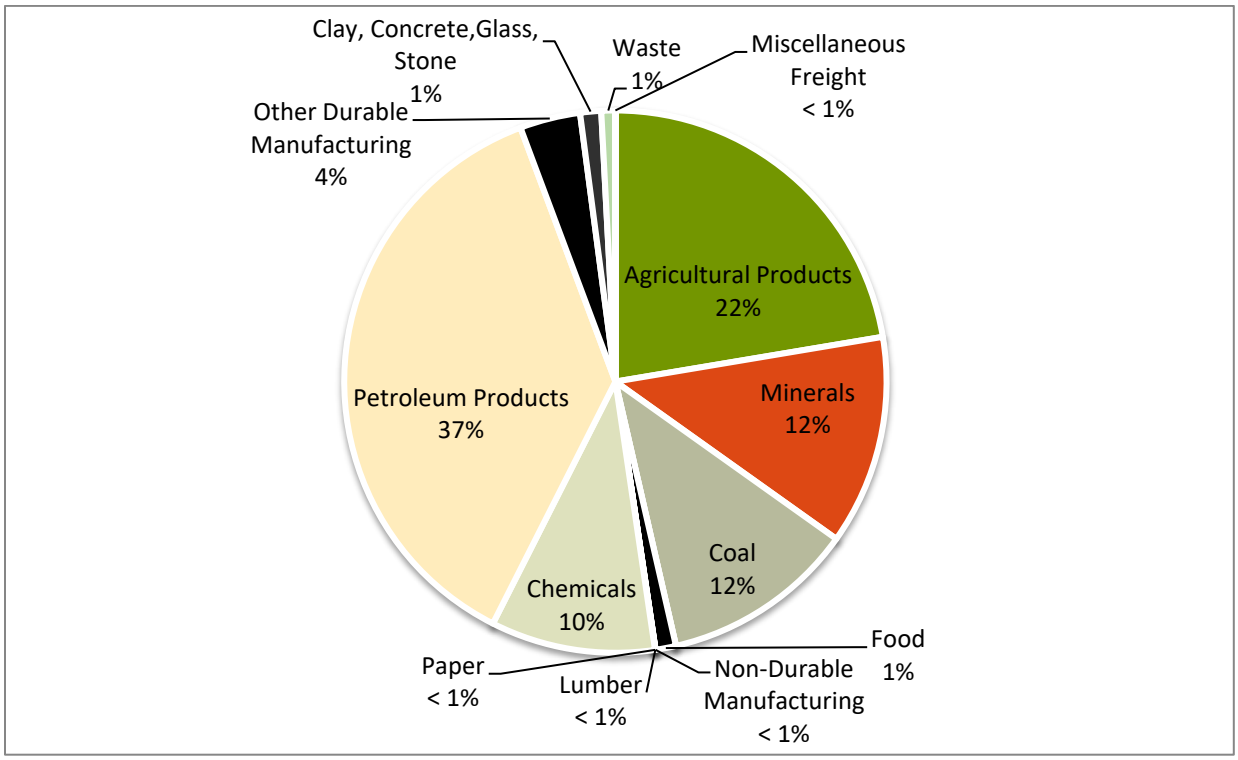
7.3 Ports and Waterways Flows

A majority of the data for ports and waterways flows is from Transearch and the FHWA Freight Analysis Framework. Transearch and FAF data are utilized to provide consistency for comparison of freight volume and value by mode. However, river level data is not available through Transearch, therefore USACE data was used for more detailed waterway analysis.

7.3.1 2012 Waterborne Freight Flows

According to Freight Analysis Framework and Transearch data, Louisiana shipped or received nearly 296 million tons of goods worth $144 billion via the State's system of ports and waterways in 2012. As shown in **Figure 7-16**, petroleum products (including natural gas), agricultural products, minerals (non-metallic minerals), coal and chemicals were major commodities shipped through the ports and waterways. These three categories accounted for over 93 percent of Louisiana's waterborne shipments by weight.

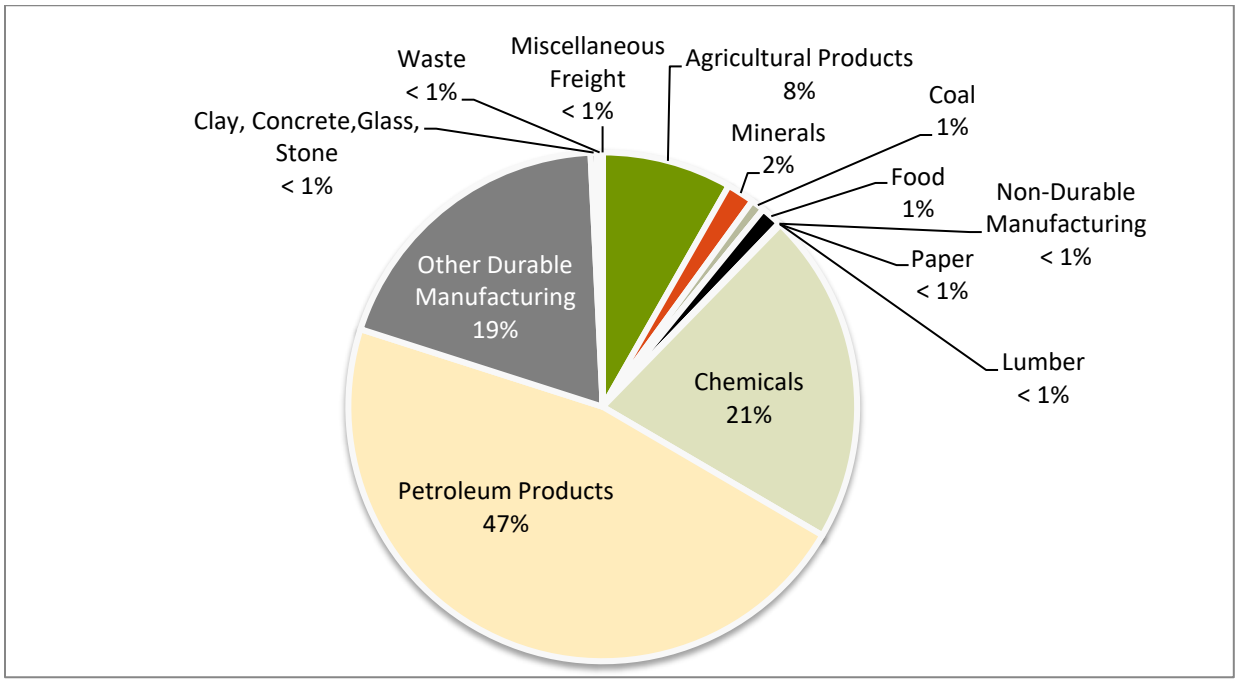
Figure 7-16: Tonnage of Commodities Shipped by Water To, From, or Within Louisiana, 2012



Source: Transearch 2009, updated by 2012 FHWA Freight Analysis Framework and CDM Smith

Petroleum products and chemicals were leading commodities shipped by weight which were also prominent in the list of top commodities shipped by value, in 2012 (**Figure 7-17**). Those two commodity groups, together with other durable manufactured goods, accounted for 87 percent of all shipments by value.

Figure 7-17: Value of Commodities Shipped by Water To, From, or Within Louisiana, 2012



Source: Transearch 2009, updated by 2012 FHWA Freight Analysis Framework and CDM Smith

Table 7-6 presents the distribution of waterborne shipments within, from and to Louisiana as well as the value per ton of commodities. The top commodities shipped by barge and ship are at the lower end of the value per ton scale, as shippers of these time-insensitive commodities can take advantage of the lower costs offered by bulk and containerized waterborne shipping options.

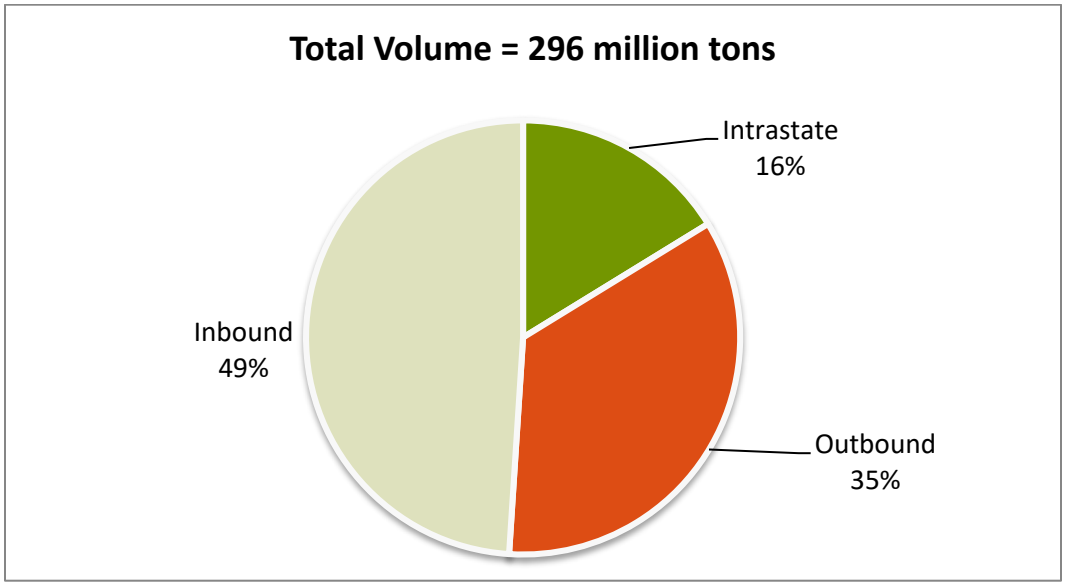
Table 7-6: Waterborne Freight by Commodity, 2012

Commodity	Tons (thousands)	Percent	Value ($thousands)	Percent	Value per Ton ($)
Agricultural Products	66,268	22%	$11,868,016	8%	$179
Minerals	37,020	12%	$2,525,631	2%	$68
Coal	34,274	12%	$1,245,002	1%	$36
Hazardous Materials	0	0%	$0	0%	$0
Food	3,618	1%	$1,890,582	1%	$523
Non-Durable Manufacturing	15	0%	$94,311	0%	$6,317
Lumber	56	0%	$27,784	0%	$494
Paper	24	0%	$50,858	0%	$2,101
Chemicals	29,030	10%	$30,408,032	21%	$1,047
Petroleum Products	109,199	37%	$66,921,777	47%	$613
Other Durable Manufacturing	10,695	4%	$27,770,381	19%	$2,597
Clay, Concrete, Glass, Stone	3,713	1%	$570,335	0%	$154
Waste	2,465	1%	$505,492	0%	$205
Miscellaneous Freight	9	0%	$30,439	0%	$3,220
Hazardous Waste	0	0%	$0	0%	$0
Warehousing	0	0%	$0	0%	$0
Total	**296,386**		**$143,908,640**		**$486**

Source: Transearch 2009, updated by 2012 FHWA Freight Analysis Framework and CDM Smith

Figure 7-18 shows the distribution of waterborne shipments to, from and within Louisiana and shows that nearly half of all shipments originate from outside the state.

Figure 7-18: Distribution of Waterborne Shipments by Commodity



Source: Transearch 2009, updated by 2012 FHWA Freight Analysis Framework and CDM Smith

The total volume of waterborne shipments on Louisiana's waterways including through, to, from, and within Louisiana is presented in **Figure 7-19** and shows:

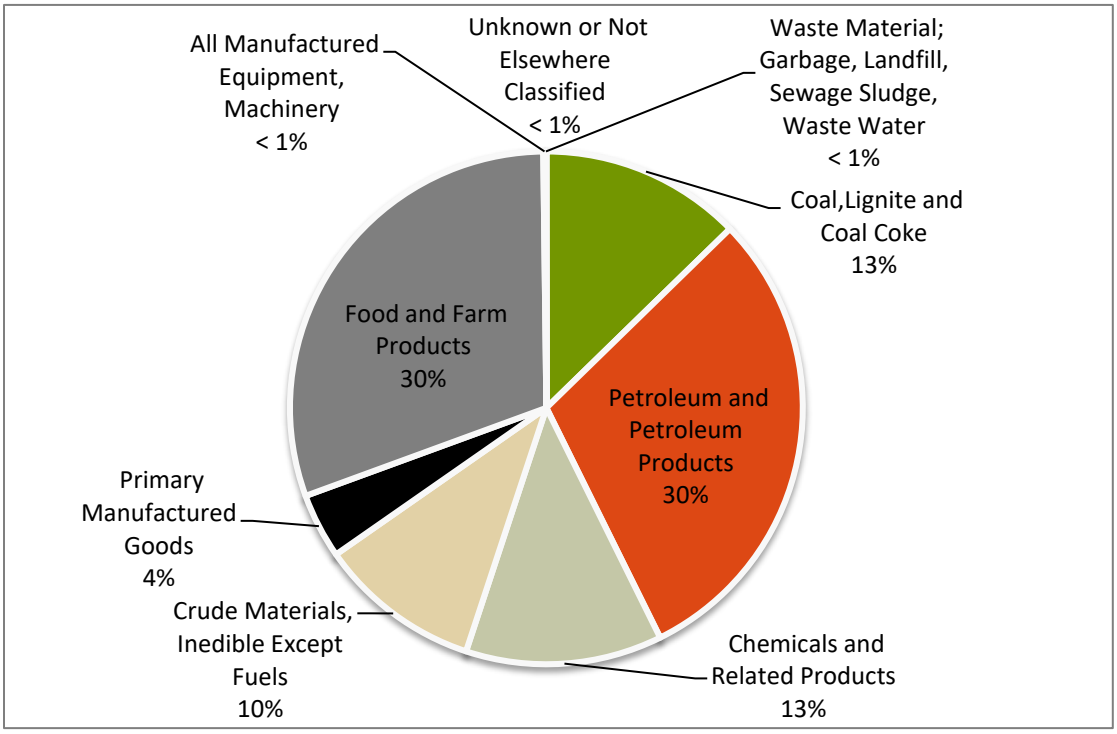
- The Mississippi River, with volumes exceeding 361 million tons between Baton Rouge and New Orleans
- The Intracoastal Waterway, with 94 million tons shipped on the segment between the Mississippi and the Sabine River, Texas
- Calcasieu River Ship Channel from Lake Charles to the Gulf of Mexico, with volumes of 49 million tons in 2012
- Atchafalaya River (Upper), from the Mississippi River to Morgan City, with 9.3 million tons shipped in 2012
- J. Bennett Johnston Waterway (Red River) from Mississippi River to Shreveport, with 6.3 million tons shipped

Figure 7-19: Commodity Volumes on Louisiana Waterways, 2012

Source: 2012 U.S. Army Corps of Engineers

The commodity information presented earlier represented a combination of port and waterway flows. **Figure 7-20** shows commodity information for the busiest stretch of waterway in Louisiana, the section of the Mississippi between Baton Rouge and New Orleans. The distribution of commodities by tonnage shows a generally similar pattern as for the waterway movements in the state as a whole. Chemicals, petroleum products and coal are major commodities. The difference is that minerals (crude materials) are somewhat less prominent.

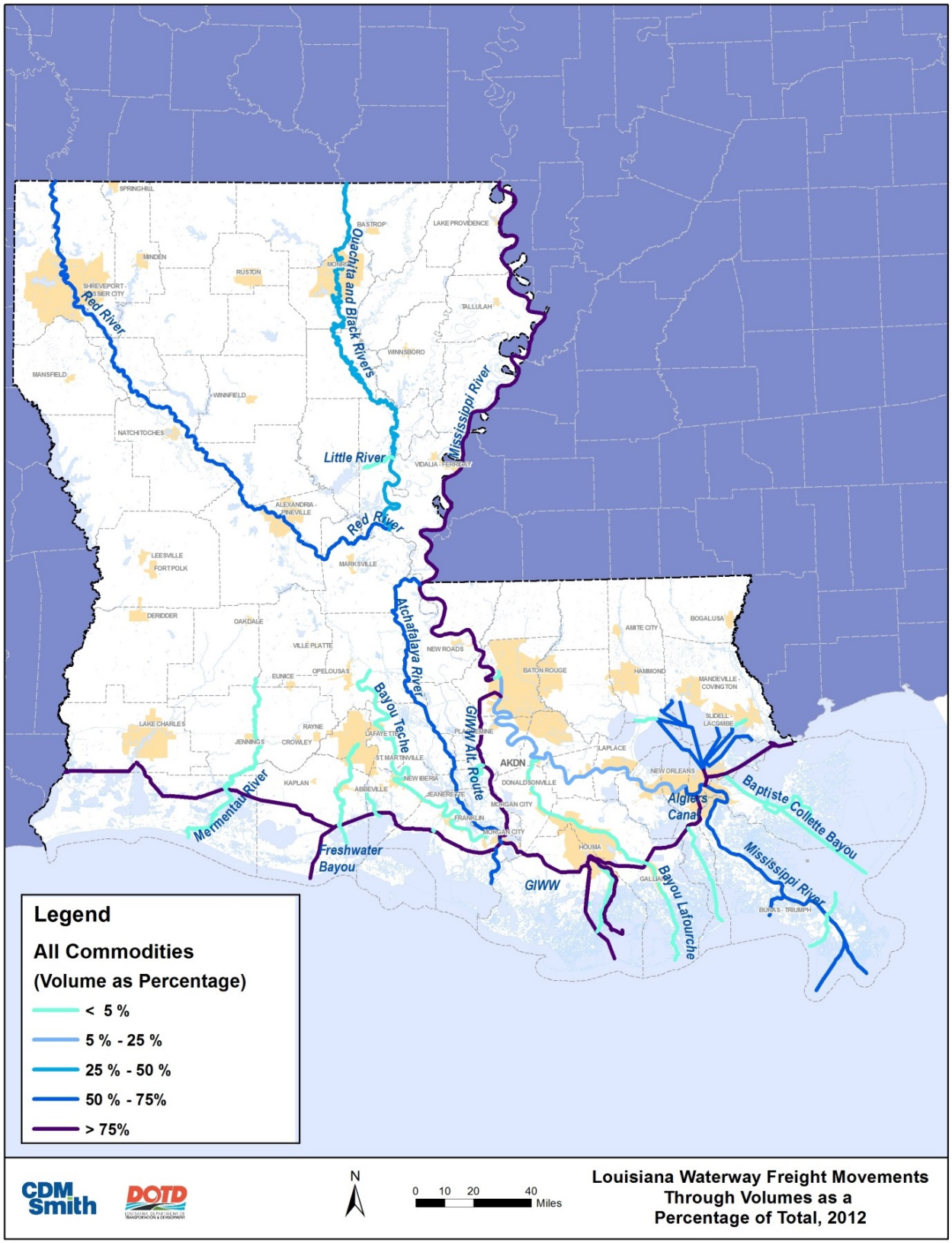
Figure 7-20: Distribution of Commodities by Tonnage on Section of Mississippi River, 2012



Source: 2012 Army Corps of Engineers

The amount of waterway traffic that is through traffic is highly variable, both by waterway and by location on the waterway. The percentage of through traffic on the Mississippi ranges from 17 to 60 percent; on other waterways, it varies from 0 to 100 percent, but overall the average is about 35 percent. **Figure 7-21** presents the percentage and volume of through traffic on Louisiana's waterways.

Figure 7-21: Through Traffic on Louisiana Waterways, 2012

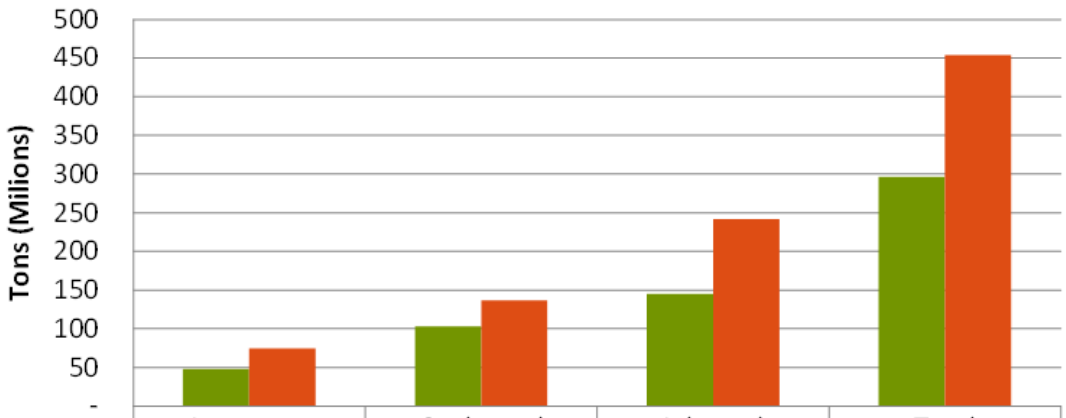


Source: 2012 Army Corps of Engineers

7.3.2 Waterborne Freight Forecasts

Waterborne freight shipments are forecast to grow at an average annual rate of 1.7 percent per year, roughly in line with overall economic forecasts between 2012 and 2040. Inbound traffic will grow disproportionately higher, at 2 percent, more than either outbound (1 percent) or intrastate (1.7 percent) traffic (see **Figure 7-22**).

Figure 7-22: Forecast Waterborne Freight Tonnage by Direction, 2012 and 2040



	Intrastate	Outbound	Inbound	Total
2012	48.1	103.1	145.1	296.4
2040	74.7	136.9	242.2	453.8

Source: Transearch 2009, updated by 2012 FHWA Freight Analysis Framework and CDM Smith

Louisiana's primary commodities today are forecast to grow at relatively modest rates over the next 26 years. Petroleum products, chemicals, other durable manufactured goods and agricultural products are forecast to grow at rates between 1 and 2.4 percent per year, with manufactured goods at the high end of the scale. Waste products, while low in absolute terms of tonnage or value compared to waterborne shipments as a whole, are forecast to grow at an annual rate of 4.1 percent (by weight) as shown in **Table 7-7**.

Table 7-7: Outbound and Inbound Water Freight Traffic by Major Commodities, 2040

	2012		2040		Annual Growth	
	Tons (thousands)	Value ($thousands)	Tons (thousands)	Value ($thousands)	Tons	Value
Agricultural Products	66,268	$11,868,016	113,513	$20,746,556	2.1%	2.2%
Minerals	37,020	$2,525,631	62,048	$2,933,230	2.0%	0.6%
Coal	34,274	$1,245,002	45,793	$1,562,977	1.1%	0.9%
Hazardous Materials	0	$-	-	$-	0.0%	0.0%
Food	3,618	$1,890,582	4,786	$2,247,106	1.1%	0.7%
Non-Durable Manufacturing	15	$94,311	3	$15,959	-6.3%	-6.6%
Lumber	56	$27,784	81	$31,772	1.4%	0.5%
Paper	24	$50,858	29	$57,739	0.7%	0.5%
Chemicals	29,030	$30,408,032	36,574	$51,092,676	0.9%	2.0%
Petroleum Products	109,199	$66,921,777	159,832	$91,105,455	1.5%	1.2%
Other Durable Manufacturing	10,695	$27,770,381	19,306	$50,886,652	2.3%	2.4%
Clay, Concrete, Glass, Stone	3,713	$570,335	4,739	$685,101	0.9%	0.7%
Waste	2,465	$505,492	7,048	$1,293,247	4.1%	3.7%
Miscellaneous Freight	9	$30,439	18	$52,956	2.5%	2.2%
Hazardous Waste	0	$-	-	$-	0.0%	0.0%
Warehousing	0	$-	-	$-	0.0%	0.0%
Total	**296,386**	**$143,908,639**	**453,768**	**$222,711,425**	**1.7%**	**1.7%**

Source: Transearch 2009, updated by 2012 FHWA Freight Analysis Framework and CDM Smith

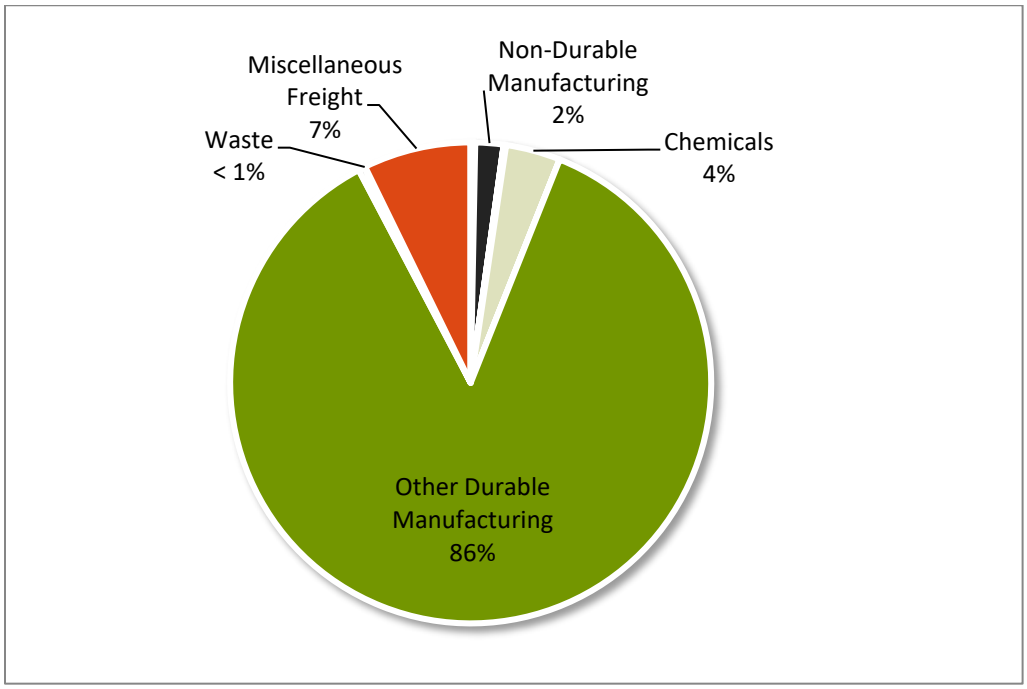
7.4 Aviation Flows

7.4.1 2012 Aviation Freight Movements

In 2012, 152,000 tons of goods worth $14.5 billion moved through Louisiana's airports. While airborne goods movement makes up a relatively small proportion of the state's total goods movement, Louisiana's airports provide access to markets for time-critical, high value good, especially, electronics and machinery.

Figure 7-23 presents the distribution of airborne freight by broad commodity categories. Manufactured goods account for 86 percent of all goods shipped, within, from, or to Louisiana.

Figure 7-23: Airborne Commodities by Value, 2012



Source: Transearch 2009, updated by 2012 FHWA Freight Analysis Framework and CDM Smith

As shown in **Table 7-8**, Louisiana ships or receives a significant amount of high-value manufactured goods used in industrial and commercial applications. These shipments include Missile/Vehicle Space Vehicle parts ($289k per ton) to Radio/TV Transmitting Equipment ($720k per ton) and other electronic equipment.

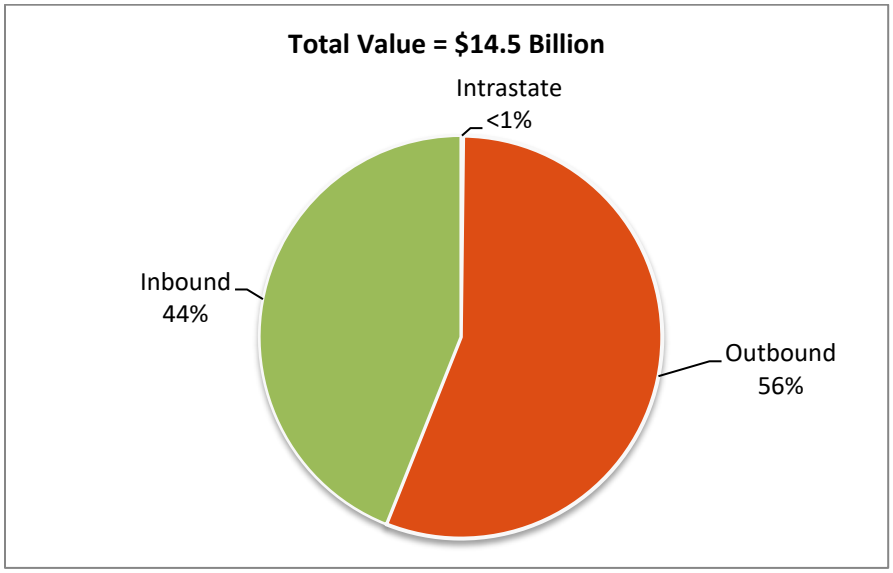
Table 7-8: Airborne Freight Shipments, by Tonnage and Value, 2012

Description	Tonnage		Value ($millions)		Average Value ($/ton)
	Amount	Percent	Amount	Percent	
Transportation Equipment, NEC	9,771	6.45%	58	0.40%	$5,972
Misc Freight Shipments	15,802	10.43%	975	6.72%	$61,675
FAK Shipments	4,926	3.25%	74	0.51%	$15,077
Carburetors, Pistons, Etc.	6,966	4.60%	72	0.50%	$10,359
Missile or Space Veh Parts	5,710	3.77%	1,652	11.39%	$289,341
Electronic Data Proc Equipment	3,594	2.37%	1,614	11.13%	$449,009
Radio or Tv Transmitting Equipment	3,487	2.30%	2,511	17.31%	$720,163
Bolts, Nuts, Screws, Etc.	2,957	1.95%	37	0.26%	$12,568
Mech Power Transmission Equipment	1,838	1.21%	56	0.39%	$30,544
Valves or Pipe Fittings	2,427	1.60%	154	1.06%	$63,556
Other	94,036	62.06%	7,301	50.34%	$77,645
TOTAL	**151,515**	**100.00%**	**14,505**	**100.00%**	**$95,736**

Source: Transearch 2009, updated by 2012 FHWA Freight Analysis Framework and CDM Smith

Louisiana is a net exporter of airborne freight, as shown in **Figure 7-24**. Very little freight moves by air internally (0.2 percent) as air service is less cost-competitive compared to trucking.

Figure 7-24: Airborne Commodities by Direction, 2012



Source: Transearch 2009, updated by 2012 FHWA Freight Analysis Framework and CDM Smith

Seven airports in Louisiana accommodated nearly 100 percent of all airborne freight shipments in 2012. Of those airports, freight activity at the New Orleans airport accounted for 98 percent of all movements in the state by value (**Table 7-9**).

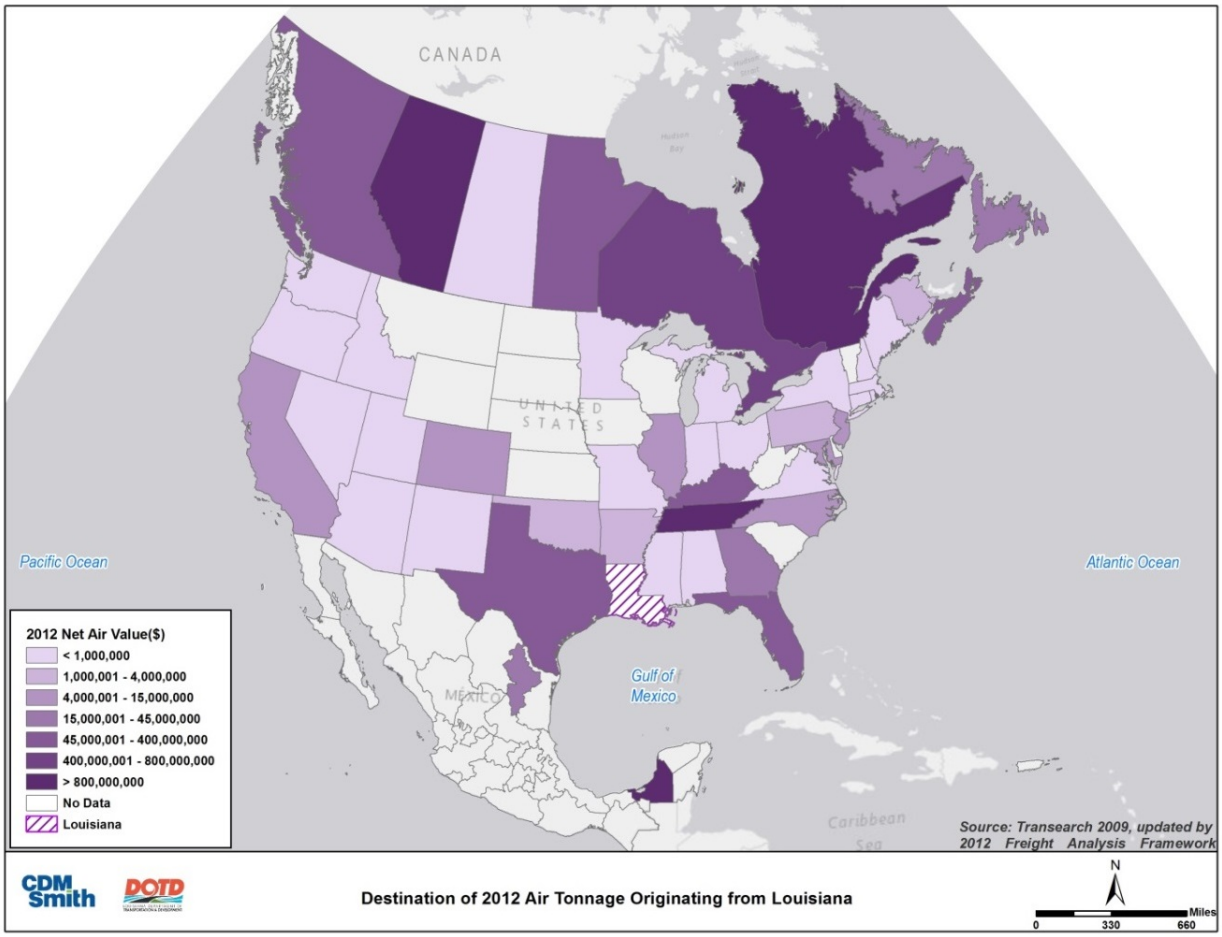
Table 7-9: Airborne Commodities for Selected Airports in Louisiana, 2012

Airport	Originated Value ($)	Destined Value ($)	Total Value
New Orleans	8,034,237,064	$6,203,110,332	$14,237,347,396
Shreveport	$52,741,898	$157,240,618	$209,982,515
Lafayette Regional	$12,459,130	$16,663,494	$29,122,623
Lake Charles Regional	$797,010	$17,293	$814,303
Monroe Regional	$68,792	$543,638	$612,430
Baton Rouge	$134,744	$2,611	$137,355
Alexandra International	$7,215	$16,270	$23,485
Total	**$8,100,445,852**	**$6,377,594,255**	**$14,478,040,108**

Source: Transearch 2009, updated by 2012 FHWA Freight Analysis Framework and CDM Smith

In 2012, a handful of states and cross-border destinations accounted for the majority of Louisiana's outbound airborne freight shipments. Tennessee, home to a large Federal Express package transfer point, handles 32 percent of the state's outgoing freight shipments by weight. However, by value, a different picture emerges. Alberta, Canada shipped 27 percent of inbound goods to Louisiana. Together with Alberta, Campeche (MX), Tennessee (US), Quebec (CA), Kentucky (US), Texas (US), and Florida (US) account for nearly 97 percent of all airborne goods shipped to Louisiana (**Figure 7-25**).

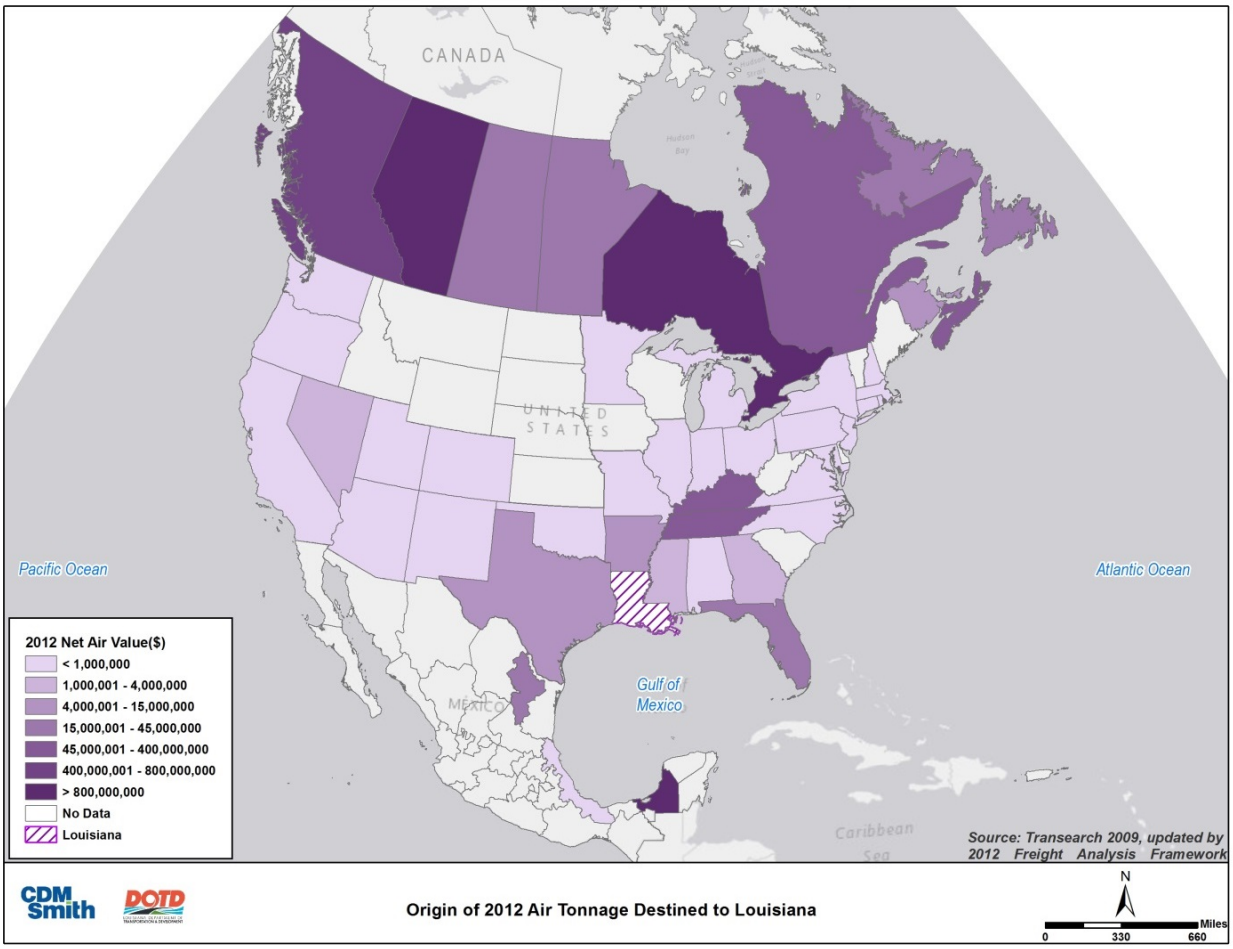
Figure 7-25: Louisiana Outbound Airborne Commodities, 2012



Source: Transearch 2009, updated by 2012 FHWA Freight Analysis Framework and CDM Smith

The locations to which Louisiana shipped goods by air were nearly identical to those from which Louisiana received airborne freight shipments. In 2012, a handful of states and cross-border destinations accounted for nearly 98 percent of all Louisiana inbound airborne freight shipments: Campeche (MX), Alberta (CA), Nova Scotia (CA), Ontario (CA), British Columbia (CA), Quebec (CA), Kentucky (US), and Tennessee (US) (**Figure 7-26**). Of these, Campeche was by far the most significant destination, receiving 49 percent of all goods shipped by value.

Figure 7-26: Louisiana Inbound Airborne Commodities, 2012

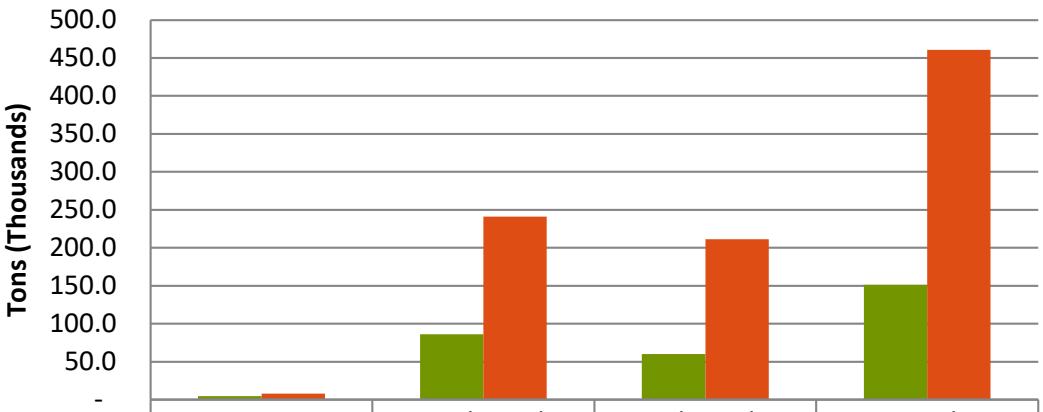


Source: Transearch 2009, updated by 2012 FHWA Freight Analysis Framework and CDM Smith

7.4.2 Airborne Freight Shipment Forecasts

Outbound air shipments are forecast to remain higher than imports, increasing 180 percent over present volumes (**Figure 7-27**). Growth in higher value shipments is expected to increase the average value per ton from nearly $95,000/ton to over $130,000/ton. This is due, in large part, to the expected growth in mixed shipments, electronics and missile/space vehicle shipments.

Figure 7-27: Forecast Airborne Freight Tonnage by Direction, 2012 and 2040



	Intrastate	Outbound	Inbound	Total
2012	4.9	86.5	60.2	151.5
2040	8.0	241.0	211.5	460.5

Source: Transearch 2009, updated by 2012 FHWA Freight Analysis Framework and CDM Smith

Overall, air freight is forecast to grow by an annual rate of 4.4 percent per year by weight and by 5.6 percent per year by value. High-value, time-sensitive manufactured goods will lead this growth, but chemicals and clay, concrete, glass, and stone products, which are specialized parts or inputs to other processes, will see growth rates that are higher than has been forecast for all other freight modes (**Table 7-10**).

Table 7-10: Air Freight Traffic by Major Commodities, 2040

Commodity	Tons		Growth per Year	Value ($thousands)		Growth per Year
	2012	2040		2012	2040	
Agricultural Products	892	1,603	2.3%	$24,728	$47,183	2.5%
Chemicals	13,065	40,572	4.5%	$533,140	$1,686,783	4.5%
Clay, Concrete, Glass, Stone	1,491	5,455	5.1%	$60,444	$182,847	4.3%
Coal	0	0	NA	$-	$-	NA
Food	2,555	5,154	2.7%	$8,676	$18,599	3.0%
Hazardous Materials	33	175	6.6%	$10,309	$34,360	4.7%
Lumber	177	479	3.9%	$1,274	$3,613	4.1%
Minerals	256	464	2.3%	$165	$277	2.0%
Miscellaneous Freight	20,850	58,215	4.0%	$1,049,209	$4,250,258	5.5%
Non-Durable Manufacturing	10,241	24,395	3.4%	$274,504	$852,825	4.5%
Other Durable Manufacturing	97,146	315,802	4.6%	$12,510,868	$52,461,402	5.7%
Paper	4,238	7,093	2.0%	$22,727	$46,826	2.8%
Petroleum Products	319	468	1.5%	$940	$1,345	1.4%
Waste	251	620	3.5%	$8,419	$13,405	1.8%
Total	**151,515**	**460,495**	**4.4%**	**$14,505,403**	**$59,599,722**	**5.6%**

Source: Transearch 2009, updated by 2012 FHWA Freight Analysis Framework and CDM Smith

7.5 Pipeline Flows

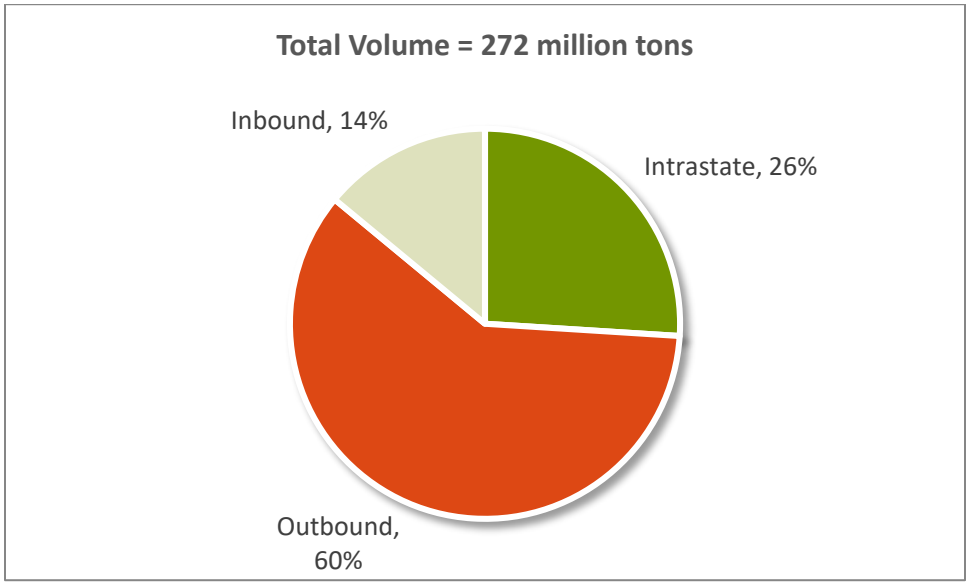
7.5.1 2012 Pipeline Shipments

Pipelines carry natural gas, petroleum, slurries and other forms of energy, and are found throughout Louisiana. Compared to shipping by rail or truck, pipelines are a safe and efficient means of moving volatile liquids and gases from their point of production to a point of distribution or consumption.

In 2012, Louisiana shipped or received 272 million tons of commodities valued at $134 billion dollars. Louisiana's pipeline system shipped out 163 million tons of commodities by pipeline, through a distribution network that spans the continental U.S. This was more than 2.3 times the amount of inbound shipments received by pipeline in 2012.

As shown in **Figure 7-28,** a very high proportion of pipeline commodities travel within the state, where they are used for industrial processes, stored for local use, or transferred to another mode for use outside the region.

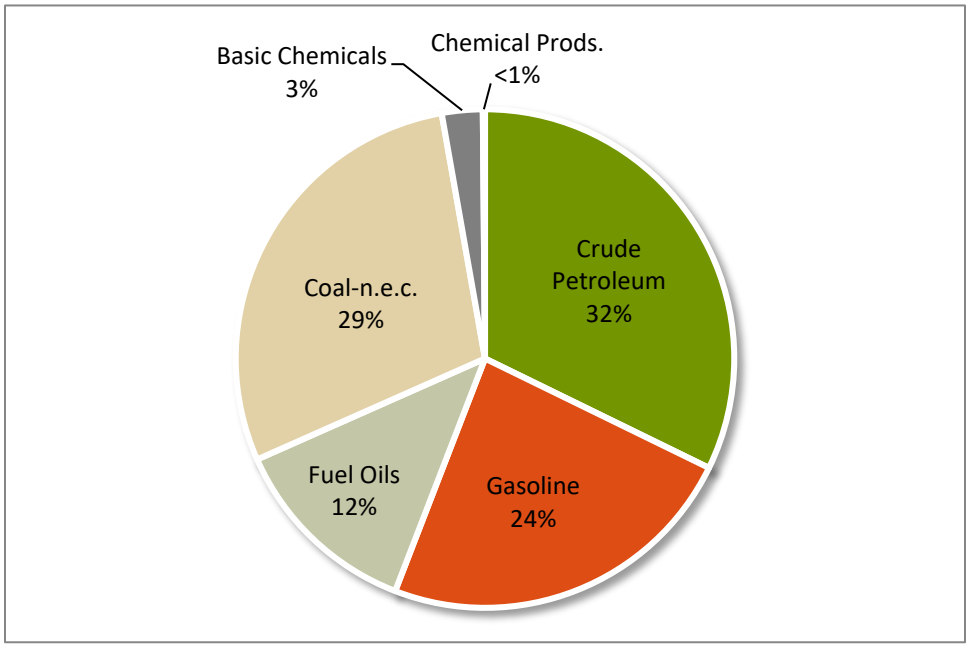
Figure 7-28: Pipeline Commodities by Direction, 2012



Source: 2012 FHWA Freight Analysis Framework and CDM Smith

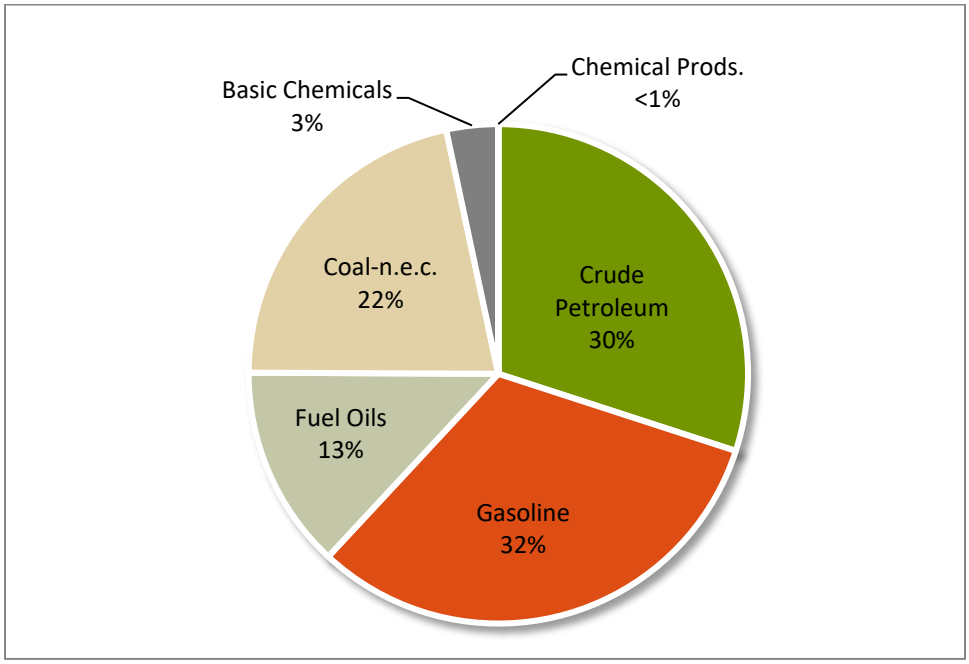
Louisiana's pipeline system moves oil, petroleum, chemicals and coal products throughout the state. In 2012 Gasoline and crude petroleum made up 56 percent of total pipeline shipments by weight, and 53 percent by value (**Figure 7-29** and **Figure 7-30**). The FHWA Freight Analysis Framework, the source of this data, does not classify natural gas as a separate commodity.

Figure 7-29: Pipeline Commodities by Weight, 2012



Source: 2012 FHWA Freight Analysis Framework and CDM Smith. Note: n.e.c. means not elsewhere classified

Figure 7-30: Pipeline Commodities by Value, 2012

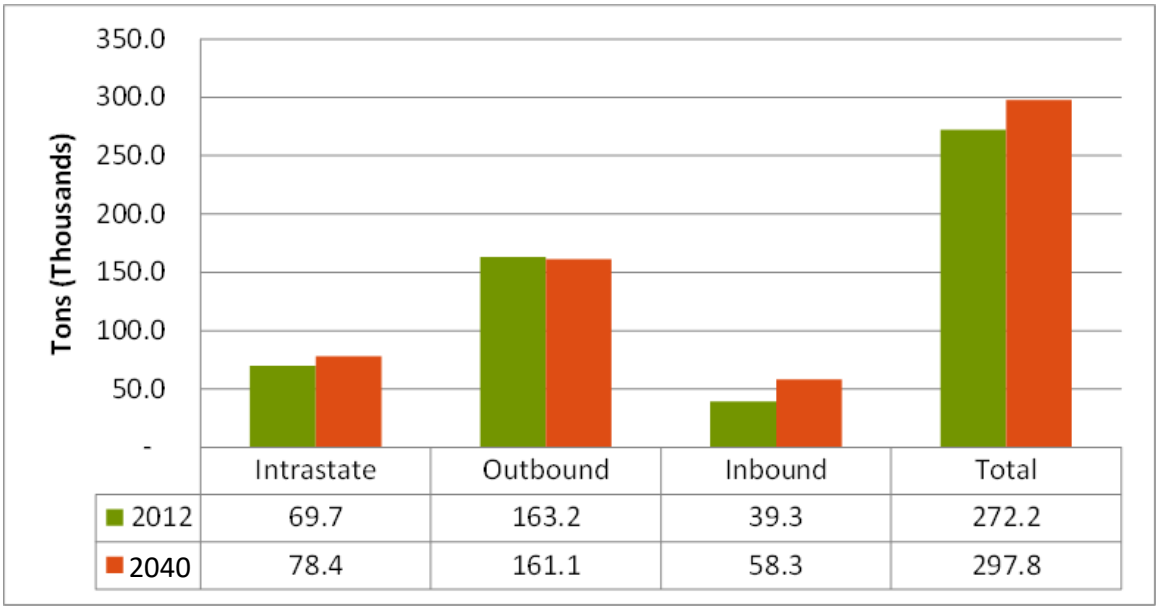


Source: 2012 FHWA Freight Analysis Framework and CDM Smith

7.5.2 Pipeline Shipment Forecasts

Growth forecasts indicate modest increases in pipeline shipments between 2012 and 2040, whether measured by tonnage or value. Outbound shipments are forecast to decrease 13 percent by value, while inbound shipments are forecast to increase by 54 percent (**Figure 7-31**). The FHWA Freight Analysis Framework, the source of these forecasts, predicts that pipeline shipments will increase 9 percent by weight, and 1 percent by value between 2012 and 2040.

Figure 7-31: Commodities Shipped by Pipeline, 2012 and 2040



	Intrastate	Outbound	Inbound	Total
2012	69.7	163.2	39.3	272.2
2040	78.4	161.1	58.3	297.8

Source: 2012 FHWA Freight Analysis Framework, and CDM Smith

8. OVERVIEW OF TRENDS, NEEDS, AND ISSUES

8.1 Significant Trends

8.1.1 Economic

Key Trade Markets

Asia is by far Louisiana's largest international trading partner, followed by South/Central America and Europe, in terms of port trade. While the U.S. has decided to abandon the Trans-Pacific Partnership (TPP), a trade agreement between the U.S., Canada and 12 nations in the Pacific Rim to lower barriers to trade, trade with Asia is likely to continue to grow. The World Bank estimates that the Chinese economy will grow at well above 6.0 percent in 2018 and a good deal of that growth will be derived from expanded trade with the U.S. This means that trade through U.S. ports, including Louisiana's, will increase. This could exacerbate current landside access issues at the Port of New Orleans. Additionally, while the U.S. and Cuba's efforts to normalize relations have stalled, the potential for increased trade with the U.S. remains. While Florida ports would realize the bulk of any new trade activity, some additional trade through Louisiana ports, particularly for agricultural products, is possible as well.

Panama Canal

The Panama Canal, completed in 1914, created one of the most important trade routes in the world, linking the Atlantic and Pacific Oceans. After nearly a century, the canal has undergone a $5.25 billion expansion to increase capacity and accommodate larger ships. The expanded canal with new locks allows for deeper, longer and wider "New Panamax" vessels, doubling existing throughput capacity from 5,000 20-foot equivalent units (TEU) on current vessels to (potentially) 13,000 TEU. The expansion, completed in 2016, will possibly reduce delays and shipper costs.

Workforce

In the years ahead, Louisiana will continue to need skilled and unskilled labor to support its resource extraction and manufacturing industries. The state may be challenged to develop the workforce it needs for these industries internally. According to a report prepared by the Louisiana Workforce Commission review, about 35 percent of respondents to a survey of workforce quality said that they had difficulty finding qualified job applicants or the workers with the certification needed. And, an association of Louisiana technical and community colleges concluded that there would be a shortage of qualified workers in construction, welding, industrial production, engineering and other occupations requiring a technical education and/or experience.

8.1.2 Demographic

As is true generally throughout the nation, Louisiana's population will age, meaning that the percentage of the population aged 65 and greater will increase over the next 10 to 20 years. A challenge for the state in the years ahead is to retain and attract younger, more mobile workers with the types of jobs and amenities they seek. Some commentators and researchers have detected a preference for living in denser urban areas among the population that is entering the workforce now, the millennials. Large

urban areas in other parts of the U.S. are seeing increased competition for scarce pavement space as demand for walkable, bikeable cities increases. In some cases, freight routes are in direct competition with bicycle routes, leading to increased safety risks.

Emerging Mega-Region

Megaregions are characterized as a network of urban clusters and their surrounding areas, connected by the existing economic, social and infrastructure relationships. Most megaregions are connected cities and surrounding areas with populations of 10 million or more. In the United States, the 11 largest megaregions (seven of which have populations of more than 10 million) represent 80 percent of U.S. economic activity. Megaregional planning involves transportation planning and decision making that is executed across boundaries for mutual benefit. Megaregions are a fairly new concept to the planning industry yet they are gaining wide support across various transportation agencies including the FHWA. According to some researchers, Louisiana sits in the middle of the emerging Gulf Coast region stretching from Brownsville, Texas to Mobile, Alabama along the Gulf of Mexico. Transportation systems and goods movement are regional in nature yet jurisdictional boundaries can limit opportunities for increased collaboration. Megaregional planning seeks to enable cooperation across jurisdictional borders to address specific challenges experienced at this scale such as managing transportation corridor mobility, protecting environmental resources, coordinating economic development strategies, and making land use decisions that comprehend all of these.

8.1.3 Energy

Oil and gas production

As the number three producer of natural gas and number nine producer of crude oil in the nation, Louisiana will be greatly affected by the future of these industries. Approximately 88 percent of the nation's offshore oil rigs are located off the Louisiana coast. Refineries and petrochemical plants in the New Orleans region have planned expansions to capitalize on positive economic trends[47]. Some longer- term projections show that the U.S. will become a net exporter of energy[48]. This could create a demand for expansions to rail, port, pipeline and truck infrastructure.

8.1.4 Environment

Alternative Energy Resources

According to the EIA, renewable energy sources and natural gas accounted for 8 percent of the transportation sector's total energy demand. While forecasts indicate that the consumption of petroleum and diesel fuel in the U.S. may well level off over the next 20 to 25 years as motor vehicles become more fuel efficient, renewable sources will account for a larger share of the total energy supply for transportation.

In 2015, the U.S. Environmental Protection Agency proposed rulemaking that would require manufacturers of heavy duty trucks to increase the fuel efficiency of their engines by up to 40 percent

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[47] *Greater New Orleans Regional Economic Development Inc., retrieved June 1, 2015 from http://gnoinc.org/industry-sectors/energypetrochemicalsplastics/*
[48] *United States Energy Information Administration, U.S. Energy Outlook, 2017, accessed at https://www.eia.gov/outlooks/aeo/*

over 2010 standards. Current heavy-duty truck fleets average around 6 miles of travel per gallon of diesel fuel.

Alternate Transportation Fuels

Compressed Natural Gas/Liquefied Natural Gas

In 2011, transportation use accounted for less than one percent of the natural gas consumed in the U.S. However, natural gas consumption in the transportation sector is expected to grow from 40 billion cubic feet (bcf) in 2012 to 850 bcf in 2040, an increase of 21-fold. Citigroup forecasts that 30 percent of the heavy truck fleet would shift to natural gas by the end of 2020; however, others project growth at a lower rate. Currently, the main obstacle to faster conversion from diesel and gasoline is the higher cost of natural gas-powered trucks and the lack of refueling stations for long-haul trips.

Natural gas is currently about 30 to 40 percent less expensive than diesel on a per gallon equivalent basis on the retail market. Consequently, commercial trucking fleets have begun converting to compressed natural gas (CNG) for short-haul operations and LNG for long-haul operations. Companies with large fleets that have made commitments to CNG/LNG include United Parcel Service (UPS), Waste Management and AT&T, to name a few.

The EIA also projects that LNG will play an increasing role in powering freight locomotives in coming years. Several major railroads are considering the use of LNG in their locomotives to lower long-term costs; however, the upfront capital cost in switching to LNG- powered locomotives is substantial. While experts believe that a switch to LNG to some degree is inevitable, the pace of change and the penetration of change are highly uncertain. The EIA's projections on the use of LNG to meet rail freight energy needs range from a low of 16 percent in by 2040 to a high of 95 percent.

Further adoption of natural gas for transportation use will require more filling stations and widespread distribution and awareness by policy-makers. Exports of LNG are also expected to increase through Louisiana's ports in the future.

Biofuels

Biofuels have the potential to reduce carbon emissions, reduce reliance on foreign oil and create rural economic development. For these reasons, biodiesel is an important biofuel for freight transportation. Increasing the use of a biodiesel blend has shown potential to be a short-term, relatively low-cost way to reduce freight-related emissions [including CO2, nitrous oxides (NOx), and particulate matter (PM-10)], which could be attractive to areas that are in nonattainment under Environmental Protection Agency's (EPA) air quality standards.

Air Quality and Regulation

The U.S. Clean Air Act regulates areas that do not meet the standards for criteria pollutants under the National Ambient Air Quality Standards (NAAQS). In nonattainment areas, federal law requires state and local governments to develop and implement plans for bringing these areas back into compliance. These areas operate under 'maintenance' state implementation plans (SIPs), which often have provisions affecting the transportation network.

As it relates to freight, project delays only prolong bottlenecks for truckers (who carry goods to other parts of the system), and restrictions on traffic in general can also affect trucks. Air quality regulation

under the Clean Air Act is yet another factor driving environmental improvements in truck emissions and fuel use.

Additionally, the EPA is adopting more stringent exhaust emission standards for large marine diesel engines; the overall strategy includes adjusting Clean Air Act standards and implementing international standards. By 2030, the measures are expected to reduce annual nitrogen oxide (NOx) emissions in the U.S. by approximately 1.2 million tons and particulate matter emissions by 143,000 tons.[49] As trucking companies are required to retrofit exhaust systems or purchase new compliant trucks to meet more stringent requirements, the associated costs will mean higher operating expenses for shippers, which in turn will lead to higher costs to transport goods.

Climate Volatility

Climate volatility is likely to have more impact on the future of surface transportation than any other issue. Anticipated sea level rise, more extreme weather events, and an increase in very hot days/heat waves have the potential to severely impact the freight transportation network. State DOTs may face future challenges and implications for surface transportation such as meeting changing public expectations, adapting vulnerable transportation infrastructure, and addressing greenhouse gas (GHG) reductions. As Hurricane Katrina demonstrated, Louisiana and New Orleans in particular are vulnerable to the effects of extreme storm events.

8.1.5 Innovative Technologies

Dredging

Given the general lack of dredging funds to maintain shipping channels at their authorized depths, many port authorities and localities are seeking alternative ways to maintain their channels. The Port of Morgan City, for instance, is testing a new dredging approach to deal with the "fluff" (liquid mud) that tends to quickly build up in a key segment of its channel. This new method involves reducing the density of the fluff enough so that vessels can pass through it, rather than trying to remove the material altogether since it silts up again almost immediately. If the method proves effective, the port will be able to assume channel maintenance responsibilities itself rather than relying on the Corps of Engineers. Such an approach could be useful to other ports in the state as well as around the country.

The Louisiana Transportation Research Center (LTRC) is currently conducting a study investigating the impact of insufficient dredging on Louisiana's commerce and identifying potential alternatives to traditional dredging as well as alternate sources of funding. In addition, recently passed Louisiana Senate Resolution 220 requires the study of shipping channels in need of maintenance dredging and the potential use of beneficially dredged material for coastal protection.

Autonomous Ships

Like the passenger and freight surface transportation sectors, cargo ship manufacturers and shippers are beginning to develop autonomous systems for marine cargo vessels. In Norway, fertilizer manufacturer Yara International is building a fully electric, zero emissions container ship to transport fertilizer in

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[49] *USEPA Office of Transportation and Air Quality. "EPA Finalizes More Stringent Standards for Control of Emissions from New Marine Compression-Ignition Engines at or Above 30 Liters per Cylinder." Available at http://www.epa.gov/nonroad/marine/ci/420f09068.pdf*

coastwise trade between Norwegian ports. The company expects to be able to deliver cargo autonomously starting in 2020.[50] Although short-sea shipping of a single commodity is a relatively narrow use case, other firms are increasingly researching the use of automated systems for longer ocean voyages. Rolls-Royce, for instance, has opened a remote controlled and autonomous shipping center in Finland which is focused on advancing research and development in these technologies. It is hard to predict the impact of autonomous ships on freight flows in Louisiana, but they could have major implications for maritime sector jobs (fewer crew may be needed on board ships, but technicians may be required for remote control operations). They should also improve safety in the maritime sector.

Terminal Automation

Intermodal container operations at both port and rail terminals can be automated. As of March 2016, there were about 25 automated container terminals around the world.[51] Most such terminals in North America are only partly automated, featuring automated stacking cranes but relying on conventional yard tractors to move boxes from the quayside to the stacks. However, the new TraPac and Middle Harbor terminals in Los Angeles are fully automated. Terminal automation has a number of advantages, including better terminal capacity and productivity and reduced emissions. These are becoming increasingly important as container vessels continue to get bigger. The newer mega-ships (with capacities of up to 18,000 twenty-foot-equivalent units) can generate 10,000 or more container moves per vessel call. However, full automation can cost upwards of $500 million, which may make it difficult to justify for all but the largest intermodal terminals, or perhaps for greenfield sites where the upgrades would not interfere with existing terminal operations.

The key impact of terminal automation technologies in Louisiana (if they are implemented) may be increased truck traffic and congestion outside the port gates, as improved operational efficiencies would allow a terminal to handle more containers, potentially increasing truck traffic in the port area.

Shore Power

Shore power, also known as cold ironing, is the practice of plugging a vessel into the landside power grid when it is docked so that it does not have to run its auxiliary engines to provide power. This reduces emissions in the port area, thus mitigating a common problem associated with seaport operations. These systems also reduce equipment wear and tear and save fuel. Container ships are good candidates for shore power because they are loaded and unloaded using landside cranes rather than shipboard equipment that must be powered from the vessel. Cruise ships and refrigerated cargo ships can also leverage this technology.

Cold ironing can be an effective emissions mitigation strategy for port regions that struggle to meet air quality requirements. The Port of Los Angeles, for instance, has been installing shore power connections since 2004. Shore power installations in the U.S. are most common at West Coast ports, with Seattle, Vancouver, Los Angeles, San Diego, San Francisco, and Oakland all having cold ironing capabilities. The

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[50] *https://www.bloomberg.com/news/articles/2017-06-12/the-electric-driverless-revolution-is-about-to-hit-high-seas*

[51] *Mongelluzzo, Bill, 'Shippers to gain reliability from US terminal automation,' Journal of Commerce, March 9, 2016*

Lake Charles Port and Harbor District is developing shore power for tugboats. No other Louisiana Port is developing shore power at this time.

Shore power requires significant capital investment in landside power hookups as well as vessel retrofitting to enable the connection (except on newbuilds, which can be specified with shore power capabilities). Implementation should therefore be based on a case-by-case evaluation, considering each port's operating needs, cargo mix, and customer base. The cost of shore side power generation should also be considered.

Positive Train Control

Positive train control (PTC) refers to technologies designed to automatically stop or slow a train before certain accidents can occur. PTC is designed to prevent collisions between trains and derailments caused by excessive speed, trains operating beyond their limits of authority, incursions by trains on tracks under repair, and by trains moving over switches left in the wrong position. The Rail Safety Improvement Act of 2008 required railroads to place PTC systems in service by December 31, 2015 on all rail main lines over which regularly-scheduled commuter or intercity passenger trains operate, and on all Class I railroad main lines with over 5 million gross ton-miles per mile annually over which any amount of toxic/poison-by-inhalation hazardous materials are handled. In late 2015, Congress extended the PTC implementation deadline to December 31, 2018. Despite the difficulties of implementing a brand-new technology, the Association of American Railroads reports that by the end of 2016, railroads had equipped 62 percent of locomotives and 74 percent of base stations with the necessary equipment for PTC and trained 50 percent of employees to implement PTC.

Of the six Class I railroads operating in Louisiana, only Union Pacific reports state-specific information on PTC implementation. UP plans to complete PTC installation in Louisiana between the third quarter of 2017 and the December 31, 2018 deadline.[52] BNSF expects to meet the implementation deadline for its system as a whole, including segments in Louisiana. Kansas City Southern was testing PTC in its New Orleans Subdivision as of March 2016. Canadian National expects to complete installation of PTC technology on its US network by the 2018 deadline. CSX and Norfolk Southern have both informed the FRA that they won't be able to meet the extended deadline; they can, however, apply for a two-year extension. In any event, PTC should have a positive effect on freight operations in Louisiana by improving safety, which may help mitigate some community concerns about rail operations.

Rail Tank Car Safety Standards

In May 2015, the Federal Railroad Administration and the Pipeline and Hazardous Materials Safety Administration issued a final rule that introduced new standards for the construction of rail tank cars as well as new operational protocols designed to improve the safety of trains moving large volumes of flammable liquids. The rule specified new rules in four key areas:

- **New tank car construction and retrofitting of existing cars.** Tank cars constructed after October 1, 2015 are required to meet the new DOT Specification 117 design which incorporates several

[52] *https://www.up.com/media/releases/170315-ptc-milestones.htm*

safety enhancements over the existing DOT-111 requirement. Existing tank cars must be retrofitted to meet the new requirements based on a risk-based retrofit schedule.

- **Braking standards.** Certain train configurations carrying significant amounts of flammable liquid cargoes will have to deploy advanced braking systems to mitigate damage in derailments. More specifically, trains meeting the definition of "high hazard flammable unit trains"[53] must be equipped with an electronically controlled pneumatic (ECP) braking system by January 1, 2021, or reduce their maximum speed to 30 miles per hour.

- **Operating protocols.** Trains transporting large volumes of flammable liquids will have to observe reduced operating speeds in certain areas (unless they are composed entirely of cars that meet the new design requirements, in which case the urban speed limit is lifted), while railroads operating such trains will have to perform routing analyses that consider various safety factors before selecting a route. They will also be required to share routing information with government officials in jurisdictions affected by the train operations.

- **Sampling and testing requirements.** Shippers are required to ensure crude oil or other unrefined petroleum products are tested and classified appropriately before offering loads for transportation.[54]

Given the amount of crude oil transported by rail in Louisiana, these new rules are likely to have impacts on railroads operating in the state as well as the communities through which the trains move. Overall, the new and retrofitted tank car design should improve crude by rail safety, however the rail industry has objected to the ECP braking requirement since tank cars are typically owned by shippers, not the railroads. This would force railroads moving such cargo to choose between restricting such trains to 69 or fewer cars or traveling no faster than 30 miles per hour, either of which would reduce rail capacity and create knock-on effects for freight and passenger rail traffic.

NextGen

NextGen is a program of technological and operational improvements to the National Airspace System (NAS) being implemented by the FAA. There are many components to NextGen, but the overarching goal is to modernize the nation's aviation system by improving air traffic management technologies and airport infrastructure to ensure continued efficiency and safety as air traffic continues to grow. NextGen will leverage GPS technologies and digital communications to make the NAS less reliant on radar surveillance, ground-based navigation, and voice communications.

NextGen is currently being implemented by individual aircraft owners and operators of aircraft throughout Louisiana by installing Automatic Dependent Surveillance –Broadcast (ADS-B) equipment as mandated by the FAA. This equipment is part of the NextGen technology that will help to improve the NAS. However, the FAA and industry partners are focusing initial infrastructure investments on the nation's busiest commercial service airports. The aircraft and infrastructure technology can bring

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[53] High hazard flammable unit trains are defined as single trains with 70 or more tank cars loaded with Class 3 flammable liquids with at least one tank car containing Packing Group I materials.
[54] USDOT, 'Rule Summary: Enhanced Tank Car Standards and Operational Controls for High-Hazard Flammable Trains,' available at https://www.transportation.gov/mission/safety/rail-rule-summary.

significant benefits for both passenger and cargo operations. For example, Memphis International Airport – home of the FedEx Express global SuperHub –has been implementing NextGen technologies since 2006. These improvements have improved runway capacity at the airport by 17 percent, reduced taxi times by three and a half minutes on average, and are saving FedEx $1 million per month in fuel expenditures.[55] Moving forward, it will be important for the Louisiana DOTD to monitor the progress of this initiative and seek opportunities for NextGen upgrades at the state's airports.

Airport Instrumented Landing Systems

Instrumented landing systems (ILS) refer to the technologies and infrastructure required to facilitate aircraft landings when pilots are unable to establish visual contact with the runway. There are three major categories of ILS. Higher categories are more sophisticated and can support lower decision heights (the altitude at which the pilot must establish the required visual reference to continue the approach) and reduced visibility distances in poor weather. (Category III supports completely automated landing.) Better ILS capabilities have a direct impact on an airport's capacity for both cargo and passenger operations as they allow the airport to handle more (and larger) planes and can mitigate the impact of inclement weather on airport operations.

ILS upgrades are normally undertaken by individual airports to increase operational efficiency by allowing aircraft to make a lower approach to land and thereby reducing diversions to other airports that may be out-of- state. ILS improvements also reduce the impact on trucking operations associated with the air cargo when the aircraft is able to land versus having to divert to another airport. Lafayette and Alexandria airports, for example, would like to upgrade to Category II capabilities. The impact of such upgrades on the surrounding transportation system would greatly increase the capability of the aircraft to land in inclement weather conditions and thereby allow cargo to reach its destination in a timely manner. LADOTD should work with its airport partners to identify the best candidates for ILS updates and seek funding sources to execute them.

Louisiana Statewide ITS Architecture Plan

Louisiana's Statewide ITS Architecture Plan defines the framework to describe, plan, and implement Intelligent Transportation Systems (ITS) throughout Louisiana with the goal of improving the efficiency, mobility, and safety of the statewide transportation system. The plan was last updated in 2016 and is based on the National ITS Architecture.

The plan addresses various systems, one of which is commercial vehicle operations. The plan notes that the existing state ITS architecture supports automated commercial vehicle credentialing, driver record transmission, carrier participation reporting, and safety status data flows from commercial vehicle operators to Louisiana State Police inspection stations to support enforcement activities. It also supports booking status and commercial vehicle permitting data flows between commercial vehicle operators and ports, as well as automated toll payment for trucks. Planned commercial vehicle ITS deployments would facilitate the flow of archived roadway information system and commercial vehicle enforcement

[55] *https://www.faa.gov/nextgen/*

data between DOTD assets including Traffic Management Centers, ITS field equipment, and the statewide transportation database, and commercial vehicle inspection stations.

Truck Parking

Truckers are required by federal regulations to stop for rest at defined intervals. However, in some regions the supply of safe, truck-friendly parking areas is severely limited, forcing truckers to park in unsafe (and sometimes illegal) places to comply with the regulations. The issue garnered national attention in 2009 when truck driver Jason Rivenburg was murdered in South Carolina after stopping to rest at an abandoned gas station. In response, Congress passed "Jason's Law" in 2012, prioritizing funding to provide commercial truck parking areas and requiring the USDOT to conduct a survey of truck parking availability by state. Some agencies are undertaking efforts to mitigate truck parking shortages through technology. One innovative project in this area is the Mid-America Association of State Transportation Officials (MAASTO) Truck Parking Information and Management System (TPIMS).[56] This system, which is being funded through a federal TIGER grant and state matching funds, will monitor truck parking availability and provide real-time information to drivers in eight Midwestern states. Information will be delivered by dynamic signs, smart phone apps, and traveler information websites. MAASTO expects full deployment by September 2018.

Virtual Weigh Stations

Virtual Weigh Stations/Electronic Permitting was the focus of an Enforcement Technologies Study conducted in 2008 and 2009.[57] The focus of the study was to develop the foundation for roadside technologies that can be used to improve truck size and weight enforcement. Outcomes of this study included development of a Concept of Operations for Virtual Weigh Stations and led to development of recently completed Virtual Weigh Station/e-Permitting Architecture. The Virtual Weigh Station concept will further increase the number of electronic screenings and, depending upon the virtual weigh station configuration, will provide a more enhanced safety and credentials assessment. Currently, the Maryland Department of Transportation is using virtual weigh station deployments to send warning letters to drivers of overweight vehicles in selected areas of the state. The Louisiana Statewide ITS Architecture supports both traditional and virtual weigh stations. It also notes that weigh in motion (WIM) systems exist at six fixed inspection stations within the state including I-20 at Delta; Greenwood on I-20 at the Texas state line; I-10 at Toomey; I-10 at the Breaux Bridge; I-10 at Laplace; and I-12 at Baptist near Hammond. Louisiana is also a PrePass state.[58]

Wireless Roadside Inspection Program

The purpose of the FHWA's Wireless Roadside Inspection Program is to increase the number and frequency of safety inspections at the roadside and obtain data about the commercial vehicle and its driver. The program is examining technologies that can transmit safety data directly from the vehicle to the roadside and from a carrier system to a government system. The safety data being considered for transmission include basic identification data (for the driver, vehicle, and carrier), the driver's hours of

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[56] *http://www.maasto.net/TPIMS.html*
[57] *Federal Highway Administration, Concept of Operations for Virtual Weigh Station, June 2009.*
[58] *PrePass is a commercial service providing automated commercial vehicle identification and weigh station bypass for participating carriers.*

service record, and sensor data that provide information on weight, tire, and brake status. Enforcement systems and staff will use this data to support E-Screening and inspections at locations such as staffed roadside sites, virtual weigh stations, and on-demand verification sites.

New Freight Data Sources

Sound freight planning requires good freight data to help decision makers understand industry and commodity flow trends and prioritize transportation investments accordingly. However, current and useful freight data can be difficult to acquire for public sector agencies. While freight flow databases such as the Freight Analysis Framework and TRANSEARCH offer high-level state and regional commodity flow information with forecasts, they often fall short when looking at smaller geographies.

Fortunately, new data sources are emerging to help fill some of these gaps. The National Performance Management Research Data Set (NPMRDS), for example, is provided by the Federal Highway Administration free of charge to public agencies and includes probe-based travel time data for the entire National Highway System, including truck-specific data. The data are useful for identifying truck bottlenecks and performance metrics. This freight plan used NPMRDS data to calculate key truck performance measures for Louisiana's highway system.

While this new data resource has been useful for DOTD's freight planning efforts, data gaps persist. For example, the NPMRDS data sometimes do not cover the critical "last mile" connections between key freight generators and the National Highway System. Moreover, detailed origin-destination freight data is often unavailable for small geographies, or is so highly aggregated that it is of limited use in freight planning. Up to date truck counts may not be available for all freight-intensive routes, especially those that are not on the state system.

Autonomous Trucks

Autonomous trucking technology continues to advance rapidly. Technology companies Uber and Waymo (Google's autonomous vehicles subsidiary) have already built autonomous truck prototypes and tested them on public roads. Otto, an autonomous truck startup that was recently purchased by Uber, recently completed a 120-mile beer delivery from Fort Collins, CO to Colorado Springs without human intervention.[59] A Swedish firm called Einride has developed a prototype electric, autonomous "T-pod" that can also be remotely controlled. The truck can carry up to 20 metric tons of cargo and is designed to operate autonomously on the highway, with a remote operator stepping in when the vehicle moves onto city roads. The prototype has no cab, windows, or any other provisions for a human driver. Einride expects to be operating the vehicles in Sweden by 2020.[60]

It is hard to predict the precise uptake and timing of widespread autonomous truck adoption, but there is little disagreement that autonomous technologies will become a key part of the trucking industry in the future. A recent survey conducted by the American Transportation Research Institute (ATRI) and the Technology and Maintenance Council (TMC) found that most trucking industry executives expect some form of trucking automation to become a reality, however this does not necessarily mean completely driverless trucks. Many observers believe that there will be a need for a human operator well into the

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[59] *http://ot.to*
[60] *http://www.traffictechnologytoday.com/news.php?NewsID=86343.*

future, particularly to handle tasks that are difficult to automate, such as driving in urban environments and making roadside repairs. Commercial Fuel Buyer magazine summarized the top 10 issues and their implications for truckers as follows:

- **Hours of service**: Allows for driver rest and productivity to occur simultaneously.
- **Compliance, safety, accountability**: Will decrease raw Safety Measurement System (SMS)[61] scores, though percentile scoring needs to change.
- **Driver shortage**: Driving is more attractive with higher productivity, less time away from home and additional logistics tasks. Fewer drivers may be needed.
- **Driver retention**: Companies with autonomous technology may attract and retain drivers.
- **Truck parking**: If "productive rest" is taken in the cab during operations, less time will be required away from home at truck parking facilities, and fewer facilities will be needed.
- **Electronic logging device (ELD) mandate**: Modifications will be necessary depending on level of autonomy.
- **Driver health/wellness**: The driver could be less sedentary and injuries could be reduced.
- **The economy**: Carriers that use autonomous trucks may see productivity and cost benefits, which could be passed on to shippers and consumers.
- **Infrastructure/congestion/funding**: Urban congestion could be mitigated through widespread use of autonomous vehicles (including cars).
- **Driver distraction**: Drivers will not be distracted from driving if the vehicle is in autonomous mode.[62]

In 2014, Louisiana House Resolution No. 133 requested DOTD to begin studying and testing autonomous motor vehicles and consider the promulgation of rules for the safe operation of such vehicles on the roads of the State. DOTD has an autonomous vehicle technology team to look at understanding and defining the role of DOTD in this area and formulate engineering/public safety policy. In 2016, Louisiana House Bill 1143 was passed, which defined "autonomous technology" for purposes of highway regulatory provisions as "technology installed on a motor vehicle that has the capability to drive the vehicle on which the technology is installed in high- or full-automation mode, without any supervision by a human operator."[63] This includes all aspects of the driving task for specific driving modes which can include things like expressway merging, high-speed cruising, low-speed operations in traffic, or closed

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[61] The SMS is the Federal Motor Carrier Safety Administration's system for identifying commercial freight and passenger carriers with potential safety problems for enforcement intervention.
[62] Summary of ATRI's Report on Autonomous Vehicle Impacts on Trucking Industry. Synopsis by Kyndall Krist http://www.commercialfuelbuyer.com/summary-atris-report-autonomous-vehicle-impacts-trucking-industry/
[63] House Bill 1143, 2016 Regular Session, available at http://www.legis.la.gov/legis/ViewDocument.aspx?d=1009651

campus operations. At first blush, there would seem to be no regulatory obstacles to testing or deploying such technologies on Louisiana public roads, including autonomous trucks. However, a more thorough review of all relevant regulations including insurance liability and the like would probably be needed prior to large-scale autonomous truck testing or adoption.

Truck Platooning

Truck platooning involves creating "trains" of two or three semi-autonomous trucks, which are linked together through wireless sensors, and controlled by the lead truck. This allows the trucks to drive in tight formation (as little as 30 feet apart), reducing wind resistance and increasing fuel efficiency. In one application developed by technology company Peloton, the speed and braking of the pack is controlled by the "captain" in the cab of the front vehicle, with the rest of the drivers following closely and needing only to steer. (Applications where the following trucks also give over steering control to the lead truck have also been tested.) Platooning is currently being tested in the United States and has been tested successfully in Europe. Peloton has demonstrated fuel savings of up to 4.5 percent for the lead truck and 10 percent for the following truck in a two-truck platoon operating at highway speeds. Increased fuel efficiency also leads to reductions in emissions, mitigating one of the negative social impacts of freight transportation.

Figure 8-1 illustrates truck operations on a highway without and with platooning. The City of Columbus, Ohio is using part of its USDOT Smart Cities Challenge grant to develop and test a truck platooning system. Columbus expects the test to reduce freight emissions while improving freight efficiency on regional truckload routes.

Figure 8-1: Truck Platooning Corridor Operations

Source: Smart Columbus Truck Platooning Working Group, presentation delivered December 16, 2016.

Truck platooning is most effective for long-haul truck trips, to maximize the fuel saving benefit. Therefore, any potential deployment in Louisiana would best be targeted towards the major through truck corridors such as I-10 and I-20. A coalition approach with neighboring states, similar to the I-10 Corridor Coalition which includes California, Arizona, New Mexico, and Texas, may be the best way to advance such a deployment initiative. A thorough legislative and regulatory review would also be needed to make sure trucks can platoon within Louisiana's existing laws. For example, in many states minimum following distance rules need to be revised.

E-Commerce and Drone Home Delivery

According to the U.S. Department of Commerce, online sales accounted for more than a third of total retail sales growth in 2015. When factoring out items not normally bought online, such as fuel and automobiles, e-commerce accounted for more than 10 percent of all of retail sales. Web sales totaled $341.7 billion for the year, a 14.6 percent increase over 2014's $298.3 billion. As e-commerce or online retail purchases continue to increase, the demand for moving those shipments will also increase. E-retailers have quickly realized that last mile delivery is becoming a critical differentiator and a strategic priority. According to a survey by Accenture in 2016, two-thirds (66%) of online consumers now choose a retailer based on the number of delivery options, with another three-quarters (76%) looking at a retailer's return policy before completing an order.

Major delivery companies such as Amazon, Google, DHL, and UPS are now working on meeting the demand for faster, cheaper package deliveries by looking for efficient, time-saving methods for home delivery including drone delivery. In June 2016, the Federal Aviation Authority (FAA) approved rules governing small commercial drones. Commercial uses such as package delivery are not yet allowed under the rules. However, the FAA is working to expand commercial uses for drones. Retailers and delivery companies have expectations that drone deliveries will allow drivers to make more deliveries per hour without driving additional miles. Amazon is piloting a drone delivery program called "Prime Air" that will deliver packages weighing less than 5 pounds to customers within 30 minutes from centrally located warehouses. Google parent company Alphabet and DHL are also working on their own drone delivery programs. Although drone delivery has several hurdles to overcome such as weather restrictions, FAA rules, and public acceptance; it has the potential to disrupt the package delivery industry.

8.2 Needs and Issues

The following freight transportation issues were identified through modal advisory councils during the development of the 2015 Louisiana STP and with the Freight Advisory Committee during the early stages of this Louisiana Freight Mobility Plan. Additionally, needs described in individual modal plans, namely the State Rail Plan, Aviation System Plan, and Marine Transportation Plan, and various technical analyses, are listed below. The issues and needs are summarized by mode.

8.2.1 Trucking

- Need for improved permitting/registration, electronic credentialing
- Concern that industry increases in truck size and weight limits will impact roadway quality and compromise safety
- Incident management is a priority to respond to increased congestion, safety issues during highway construction and impacts of vehicular accidents
- Limited availability for truck parking and rest areas along major state highways
- Overall condition & design of roadway infrastructure such as rough pavement, tight turning radii, narrow lane width, short ramps and inadequate merging lanes, and lane restrictions
- Need for improved connectivity to rail yards, water ports, airports
- Need for additional transportation funding mechanisms for highway maintenance and construction

8.2.2 Freight Rail

- 286K lb. shortline weight limitations – 286K lb. short line issues can greatly deter growth
- Terminal capacity constraints – Terminal capacity constraints that could limit growth. Major increases in grain, coal and oil shipments are anticipated that require terminal expansion
- State rail program – A state rail program is needed so state can receive federal funds, especially if there are funds to fix 286k car weight issues
- Leverage public-private partnerships for funding rail improvements
- Encourage economic development through investments in the rail system, e.g., improved access to marine and river ports, new intermodal facilities, and new industrial leads and spurs
- Develop a rail safety program to minimize accidents, injuries, and fatalities at highway-rail grade crossings in Louisiana through crossing closures, safety improvements and grade separations
- Shortline railroad track and safety upgrades
- New Orleans & Gulf Coast Railroad Relocation
- Class I Rail crossing safety and grade separations

8.2.3 Ports and Waterways

Waterway Management

- Deepening the Mississippi River and access channels is a priority
- Need for coastal waterways and channels dredging to accommodate economic growth, increasingly inadequate maintenance funding for dredging
- Intermodal connections for efficient freight movement, infrastructure to support freight handling
- Louisiana is missing an opportunity to be competitive with neighboring states due to funding limitations for ports and waterways investments
- Lockage delays due to lock dimensions that limit traffic flow
- Limited to no public knowledge on importance of waterways to state economy
- Support multi-state coordination of infrastructure improvements along the Mississippi River corridor and tributaries
- Establish a Statewide Maritime Marketing Program
- Implement the recommendations of the Louisiana Marine Transportation Systems Plan
- Support the full appropriation in the Harbor Maintenance Trust Fund for maintenance of navigation channels

Ports Concerns

- Readiness for Panama Canal expansion
- Streamlined coordination among ports and local/state/federal agencies
- Potential for large offshore receiving port (post-Panamax vessels)
- Federal ownership of navigable waterways dictates/restricts State DOTD partnership and ports are self-governing
- Need for a “streamlined” process for expediting permits, grants, CEAs, MOAs between the ports, state agencies, Corps, and other federal agencies
- Need for improved infrastructure to support increased freight handling
- Intermodal connections for efficient freight movement
- Maintaining economic competitiveness with other Gulf ports
- Climate change and sea-level rise adaptation

- Port of New Orleans: trucks accessing the port use the same roadways as commuters and others, exacerbating delays on some of the most congested highway sections in the state
- Work with the Louisiana Department of Economic Development (LED) and others to address peak hour roadway congestion by extending hours of port operations (i.e. Port of New Orleans)
- Support the development of major container terminals and distribution centers through individual port authorities
- Increase funding for the Port Priority Program
- Continue to work through partnerships to increase funding for and utilization of the inland waterway system and of coastal ports
- Support public-private partnerships for maritime facility investment, including distribution centers, through tax credits and other tax incentives
- Maintain a minimum balance of $25 Million in Priority 2 of the State Capital Outlay Program for navigation and port related freight rail capital projects in accordance with a priority program developed by DOTD and approved by the Joint Transportation Committee

8.2.4 Aviation

- Need for improved intermodal connectivity – Access from the general aviation airports to rail and interstates for freight is an issue
- Consider the public/private development of intermodal transportation center(s) in Louisiana
- Support an ongoing annual appropriation to support the General Aviation & Air Carrier Maintenance Programs
- Support a reauthorization of the Federal Airport Improvement Program that best benefits Louisiana aviation
- Provide state support for commercial service airport development in accordance with approved master plans
- Update Statewide Economic Impact of Aviation Study every 3 to 5 years
- Update the Louisiana Aviation System Plan every 5 to 10 years
- Conduct a review of the DOTD Aviation Section meteorological tower policies in comparison with other states
- Develop aviation marketing program, using General Fund monies, to attract additional air service, air cargo, and aerospace companies
- Increase the level of funding to accommodate needs of Louisiana's aviation system
- Develop and implement a pavement management system that predicts pavement needs and costs
- Runway extensions particularly for Shreveport Regional
- Aircraft maintenance provision particularly at New Orleans Louis Armstrong International Airport
- Increase hangar space
- Improve intermodal connectivity and access from general aviation airports to rail and interstates

8.2.5 Pipelines/Petrochemical Industry

- Need continued investment in infrastructure to ensure Louisiana can remain competitive in the volatile petrochemical industry
- Need for more skilled workers in the petrochemical industry

9. STRENGTHS AND CHALLENGES OF THE FREIGHT TRANSPORTATION NETWORK

9.1 Strengths

Louisiana's economy and the freight network that supports it have particular strengths and challenges that are the subject of this section of the Plan. The sources for this discussion include the Freight Advisory Committee meetings, the modal advisory council meetings conducted during the development of the 2015 Louisiana STP, and general information gathering conducted by the Plan team.

9.1.1 Energy Access

According to the EIA, in 2014 Louisiana was the second-ranked state in both total and operating refinery capacity with 19 operating refineries. Crude oil and natural gas are found beneath the thick deltaic sediments of both Louisiana's shores and offshore. The subtropical climate and high-quality soils help create a diverse agricultural economy that gives Louisiana substantial biomass potential from the agricultural byproducts and wood waste. Increasing the capacity of the freight transportation infrastructure would increase economic benefits to the state and reduce negative impacts. A brief description of Louisiana's energy profile follows.

Petroleum

Louisiana is a top crude oil producer and ranks among the top nine crude oil producing states in the nation. Many of the nation's largest oil fields are found off the Louisiana coast in the Federal Outer Continental Shelf (OCS), and a large share of Federal OCS production in the Gulf of Mexico comes onshore in Louisiana. Louisiana is the leading importer of foreign crude oil. It receives petroleum at several ports, including the Louisiana Offshore Oil Port (LOOP). Louisiana's 19 oil refineries account for nearly one-fifth of the nation's refining capacity and are capable of processing more than 3.2 million barrels of crude oil per calendar day.

About three-fourths of Louisiana's refined petroleum products are sent out of state. The Plantation Pipeline, one of the largest refined petroleum product pipelines in the nation, originates near Baton Rouge, Louisiana, and supplies much of the South with motor gasoline, jet fuel, diesel, and biodiesel before terminating in the Washington, DC area. Several other major product pipeline systems also pass through the State. Refined petroleum products also supply Louisiana's industrial sector, particularly the petrochemical industry. Louisiana has one of the largest concentrations of petrochemical manufacturing facilities in the nation. Consequently, Louisiana's total and per capita consumption of petroleum is among the highest in the nation.

Natural Gas

Louisiana is one of the top natural gas-producing states in the country with approximately 7 percent of the nation's dry natural gas reserves. Among its many productive natural gas reservoirs is the Haynesville Shale, a major shale gas-producing formation.

The state also plays a very important role in the movement of natural gas from the Gulf to other U.S. markets. The Henry Hub in Erath, Louisiana connects pipelines from nine different states and is the center of the natural gas futures market. Louisiana has three onshore liquefied natural gas (LNG) terminals, more than any other state. All three terminals are in the process of adding capability to export LNG to other countries.

Louisiana's natural gas consumption is high, ranking near the top of all states. Almost two-thirds of the natural gas consumed in Louisiana is used in industrial processes. Another one-fifth is used for electricity generation. More than one-third of Louisiana households use natural gas for home heating, which is relatively insignificant as a result of the state's mild winters. The use of gas to maintain pressure in pipelines is substantial in Louisiana and second only to that of Texas.

Coal

Louisiana has the nation's second largest coal exporting port, located in Plaquemines Parish. In 2013, about one-sixth of the nation's coal for export traveled down the Mississippi River and out through the Port of Plaquemines. The state has only minor coal resources of its own, and approximately three-fourths of the coal used in Louisiana is from out of state.

Electricity

Per capita retail sales of electricity in Louisiana are among the highest in the nation, particularly to the residential sector, where three-fifths of all households use electricity for home heating and cooling. The primary fuel used for electricity generation in Louisiana is natural gas. It provides slightly more than half of the state's net generation, a higher proportion than in most other states in the nation and about twice the national average. Coal, Louisiana's second-leading source for electricity generation, fuels about one-fifth of the total. Louisiana's two single-reactor nuclear power plants, located along the lower Mississippi River, typically provide less than one-fifth of the state's electricity. Very little electricity is generated from renewable resources.

Renewable Energy

Biomass is abundant in Louisiana and electricity generated from wood and wood waste accounts for two-thirds of the state's small amount of renewable generation. Hydroelectric power provides the remaining one-third. Bagasse, the sugar cane waste product, and other agricultural residues can provide additional biomass resources. Facilities to convert bagasse into pellets for power plant fuel are planned. Although there is little wind potential, state tax credits exist for the development of wind systems. Tax credits for solar systems are also available.

Table 9-1 lists the energy indicators for Louisiana according to the EIA. **Table 9-2** lists Louisiana's energy reserves and supplies as of January 2015. **Figure 9-1** illustrates the high-density locations of oil and gas wells in Louisiana and their clusters which are primarily in the northern portion of the state.

Table 9-1: Louisiana Energy Indicators

Energy Indicators				
Demography	**Louisiana**	**Share of U.S.**		**Period**
Population	4.6 million	1.5%		2013
Civilian Labor Force	2.2 million	1.4%		2014
Economy	**Louisiana**	**U.S. Rank**		**Period**
Gross Domestic Product	$ 253.6 billion	23		2013
Gross Domestic Product for the Manufacturing Sector	$ 59,325 million	11		2013
Per Capita Personal Income	$ 40,689	32		2013
Vehicle Miles Traveled	46,889 million miles	26		2012
Land in Farms	7.9 million acres	34		2012

Source: U.S. Energy Information Administration, State Energy Data System, data updated January 15, 2015, retrieved January 30, 2015

Table 9-2: Louisiana Reserves and Supplies

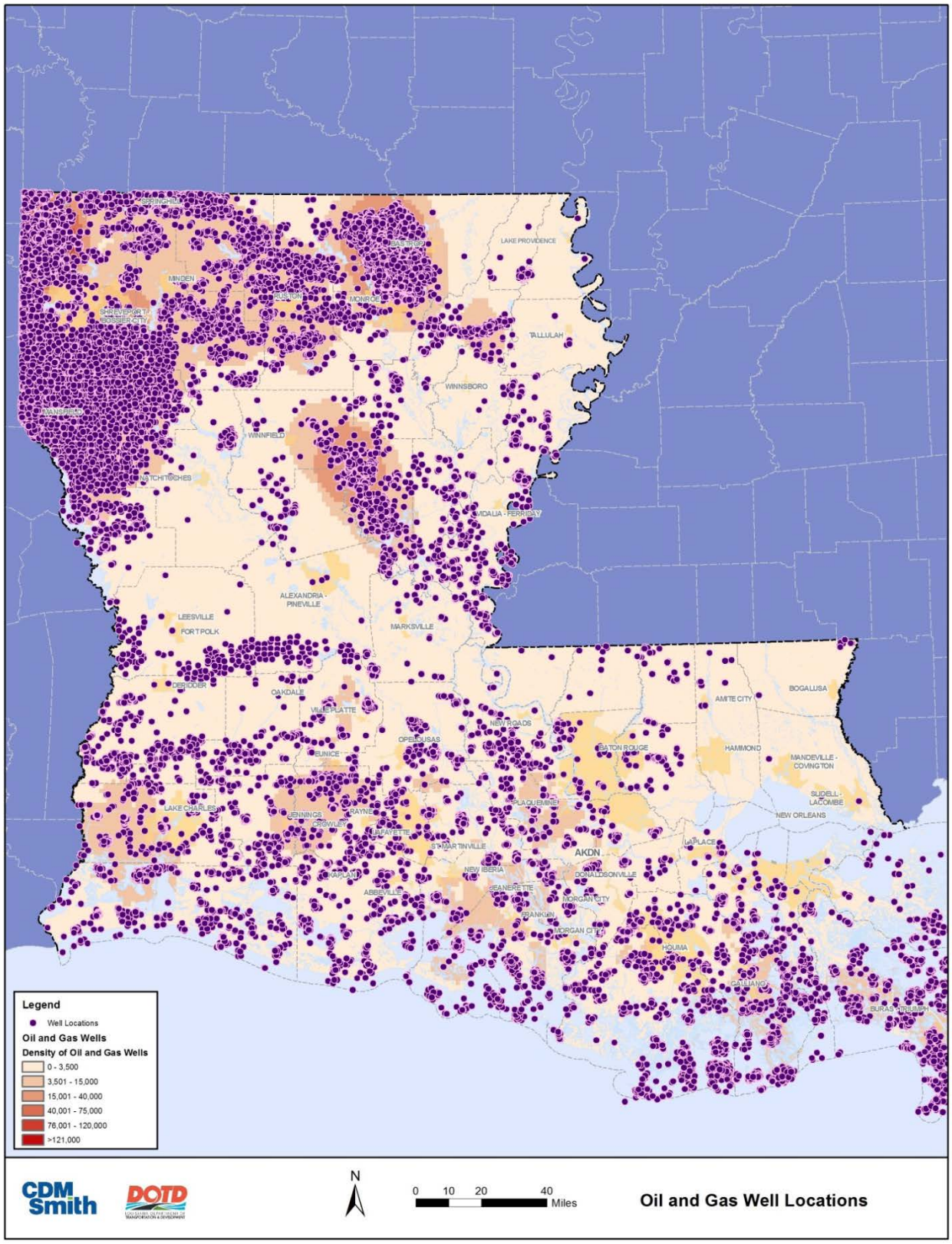
Reserves	Louisiana	Share of U.S.	Period
Crude Oil	503 million barrels	1.5%	2013
Dry Natural Gas	20,164 billion cu ft	6.0%	2013
Expected Future Production of Natural Gas Plant Liquids	212 million barrels	1.8%	2013
Recoverable Coal at Producing Mines	W	W	2012
Rotary Rigs & Wells	**Louisiana**	**Share of U.S.**	**Period**
Rotary Rigs in Operation	108 rigs	6.1%	2013
Natural Gas Producing Wells	19,683 wells	4.0%	2013
Production	**Louisiana**	**Share of U.S.**	**Period**
Total Energy	3,794 trillion Btu	4.8%	2012
Crude Oil	5,766 thousand barrels	2.1%	2014
Natural Gas - Marketed	2,406,834 million cu ft	9.4%	2013
Coal	3,971 thousand short tons	0.4%	2012
Capacity	**Louisiana**	**Share of U.S.**	**Period**
Crude Oil Refinery Capacity (as of Jan. 1)	3,274,520 barrels/calendar day	18.3%	2014
Electric Power Industry Net Summer Capacity	26,228 MW	2.5%	2014
Net Electricity Generation	**Louisiana**	**Share of U.S.**	**Period**
Total Net Electricity Generation	7,905 thousand MWh	2.5%	2014
Net Electricity Generation (share of total)	**Louisiana**	**U.S. Average**	**Period**
Petroleum-Fired	*	0.3 %	2014
Natural Gas-Fired	57.3 %	30.8 %	2014
Coal-Fired	14.4 %	35.7 %	2014
Nuclear	17.4 %	19.9 %	2014
Hydroelectric	0.9 %	5.4 %	2014
Other Renewables	2.9 %	7.2 %	2014

Table 9-2 Continued

Reserves	Louisiana	Share of U.S.	Period
Stocks	**Louisiana**	**Share of U.S.**	**Period**
Motor Gasoline (Excludes Pipelines)	1,556 thousand barrels	9.3%	2014
Distillate Fuel Oil (Excludes Pipelines)	6,972 thousand barrels	7.8%	2014
Natural Gas in Underground Storage	586,947 million cu ft	7.4%	2014
Petroleum Stocks at Electric Power Producers	477 thousand barrels	1.6%	2014
Coal Stocks at Electric Power Producers	3,261 thousand tons	2.4%	2014
Production Facilities	**Louisiana**		
Major Coal Mines	None		
Petroleum Refineries	Alon Refining (Krotz Springs), Calcasieu Refining (Lake Charles), Calumet Lubricants (Cotton Valley), Calumet Lubricants (Princeton), Calumet Shreveport (Shreveport), Chalmette Refining (Chalmette), Citgo Petroleum (Lake Charles), Phillips 66 Company (Belle Chasse), Phillips 66 Company (Westlake), Excel Paralubes (Westlake), Exxon Mobil Refining & Supply (Baton rouge), Marathon Petroleum (Garyville), Motiva Enterprises (Convent), Motiva Enterprises (Norco), Valero Energy (Meraux), Pelican Refining Company (Lake Charles), Placid Refining (Port Allen), Shell Oil Products (Saint Rose), Valero Refining (Norco)		
Major Non-Nuclear Electricity Generating Plants	Big Cajun 2 (Louisiana Generating LLC); Willow Glen (Entergy Gulf States Louisiana LLC); Nine Mile Point (Entergy Louisiana Inc); Red River Energy Facility (Shreveport-Bossier Port of); Rodemacher (Cleco Power LLC)		
Nuclear Power Plants	Waterford 3 (Entergy Louisiana Inc), River Bend (Entergy Gulf States Inc)		

Source: U.S. Energy Information Administration, State Energy Data System, data updated January 15, 2015, retrieved January 30, 2015

Figure 9-1: Oil and Gas Well Locations



Source: CDM Smith and DOTD

9.1.2 Industry Growth

According to the Louisiana Association of Business and Industry (LABI), Louisiana competes for industry growth and jobs with neighboring states and international countries. A few statistics reported by the LABI (and others as noted) include:[64]

- Louisiana recently ranked as the 16th top exporting state in the nation with over $48 billion in exports in 2016.[65]
- Companies headquartered outside the U.S. employ more than 50,000 people in Louisiana, a number that is on the rise.
- Consistently ranked in the Top 10 busiest ports in America, the Port of New Orleans has seen a 32 percent increase in foreign container trade in just the past five years.
- According to Business Facilities Magazine's 2014 Business Facilities Rankings Report, Louisiana ranked number one in the nation for best business climate and number three in the nation for economic growth potential.[66]

The Louisiana Workforce Commission has projected employment by industry in Louisiana for year 2022 as shown in **Table 9-3**. Freight related industries as a whole are expected to experience an 11 percent increase in employment by year 2022. Those industries include Agriculture, Fishing, Forestry, and Hunting; Mining; Utilities; Construction; Manufacturing; Wholesale Trade; and Transportation and Warehousing.

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[64] *From Louisiana Association of Business and Industry (LABI) 2014 Issue Brief 1, http://labi.org/assets/media/documents/2014_001_Issue_Brief--Workforce.pdf, accessed February 20, 2015.*
[65] *United States Bureau of the Census, USA Trade Online*
[66] *From Business Facilities Magazine 2014 Business Facilities Rankings Report, http://businessfacilities.com/2014/08/2014-business-facilities-rankings-report/, accessed March 12, 2015.*

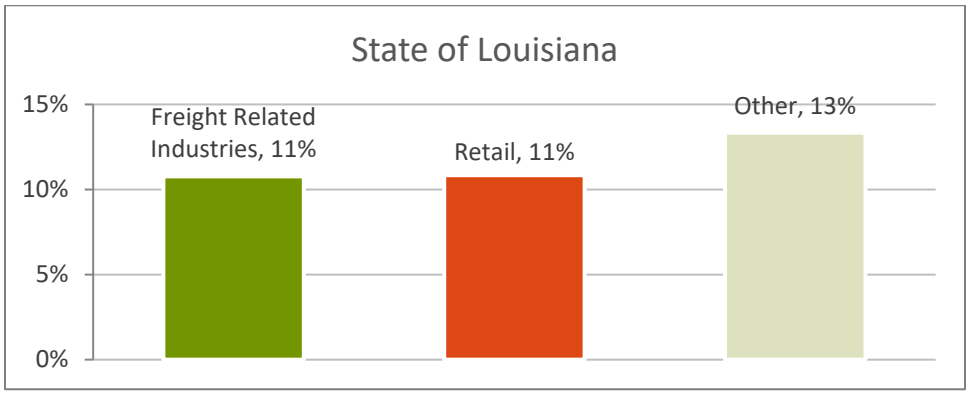
Table 9-3: 2022 Projected Employment by Industry, State of Louisiana

Industry Sectors	NAICS CODE	2012 Average Employment	2022 Projected Employment	Employment Change 2012-2022	Percent Change 2012-2022
TOTAL, All Industries		**2,004,830**	**2,264,489**	**259,659**	**13.0%**
Agriculture, Fishing, Forestry, and Hunting	11	19,292	19,135	-157	-0.8%
Mining	21	52,193	59,927	7,734	14.8%
Utilities	22	9,141	9,756	615	6.7%
Construction	23	126,220	146,742	20,522	16.3%
Manufacturing	31-33	141,816	156,032	14,216	10.0%
Wholesale Trade	42	72,607	82,283	9,676	13.3%
Retail Trade	44-45	222,577	246,704	24,127	10.8%
Transportation and Warehousing	48-49	81,180	93,388	12,208	15.0%
Information	51	24,758	27,235	2,477	10.0%
Finance and Insurance	52	56,511	61,280	4,769	8.4%
Real Estate and Rental and Leasing	53	31,803	36,004	4,201	13.2%
Professional, Scientific, and Technical Services	54	83,973	105,284	21,311	25.4%
Management of Companies and Enterprises	55	25,088	30,680	5,592	22.3%
Administrative and Waste Services	56	93,812	109,879	16,067	17.1%
Educational Services	61	165,284	180,615	15,331	9.3%
Health Care and Social Assistance	62	279,560	333,619	54,059	19.3%
Arts, Entertainment and Recreation	71	28,380	30,776	2,396	8.4%
Accommodation and Food Services	72	178,698	202,208	23,510	13.2%
Other Services, Except Public Administration	81	167,596	179,138	11,542	6.9%
Government	90	144,341	153,804	9,463	6.6%

** Employment figure suppressed to prevent disclosure of a dominant firm.*
Source: Louisiana Workforce Commission.
http://www.laworks.net/LaborMarketInfo/LMI_OccIndustryProj.asp?years=20122022

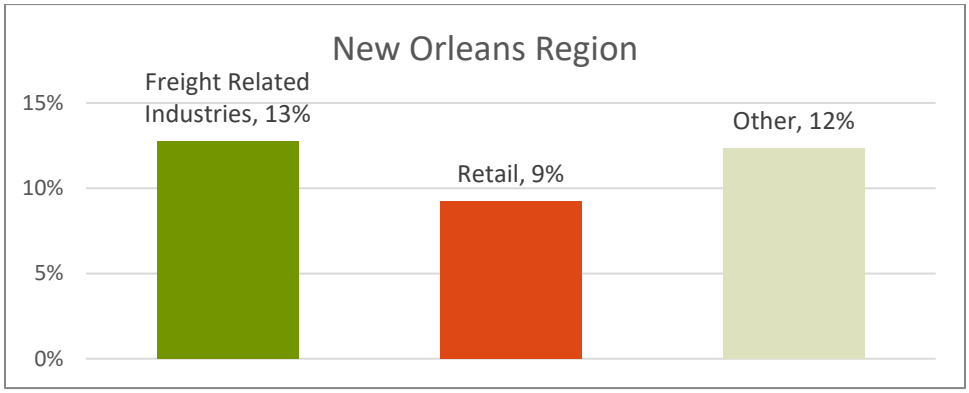
Figure 9-2 through **Figure 9-10** illustrate the projected employment changed from 2012 to 2022 for the state as a whole and the nine regional labor markets. Freight-related industries include agriculture, fishing, forestry, and hunting; mining; utilities; construction; manufacturing; wholesale trade; and transportation and warehousing. Freight improvements targeted to these industries would help support existing and potentially attract new businesses.

Figure 9-2: Louisiana Projected Employment Change (2012-2022)



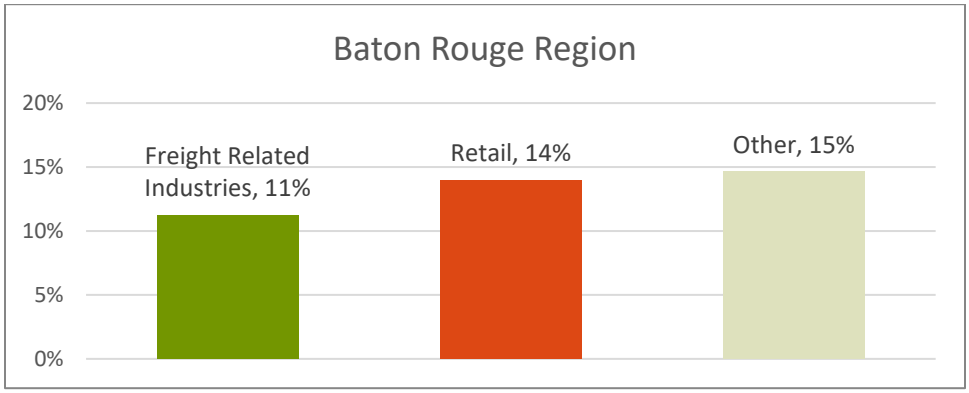
Source: Louisiana Workforce Commission, http://www.laworks.net/LaborMarketInfo/LMI_OccIndustryProj.asp?years=20122022

Figure 9-3: New Orleans Region Projected Employment Change (2012-2022)



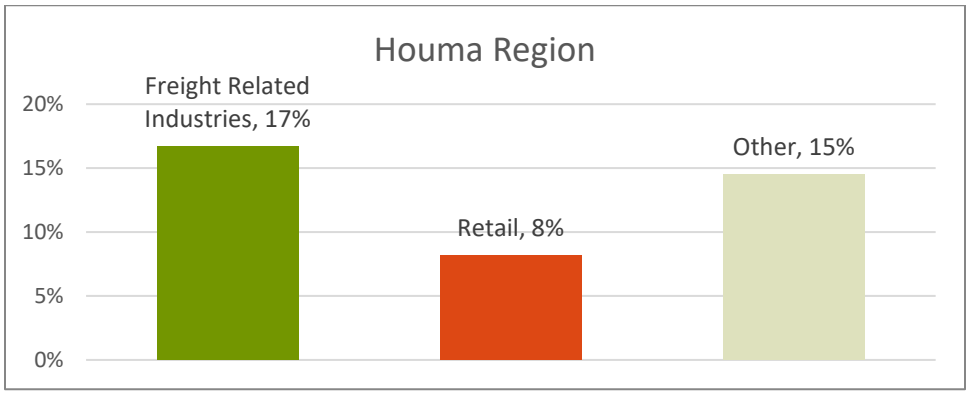
Source: Louisiana Workforce Commission, http://www.laworks.net/LaborMarketInfo/LMI_OccIndustryProj.asp?years=20122022
Notes: New Orleans Region includes: Jefferson, Orleans, Plaquemines, St. Bernard, St. Charles, St. James, St. John the Baptist, & St. Tammany Parishes

Figure 9-4: Baton Rouge Region Projected Employment Change (2012-2022)



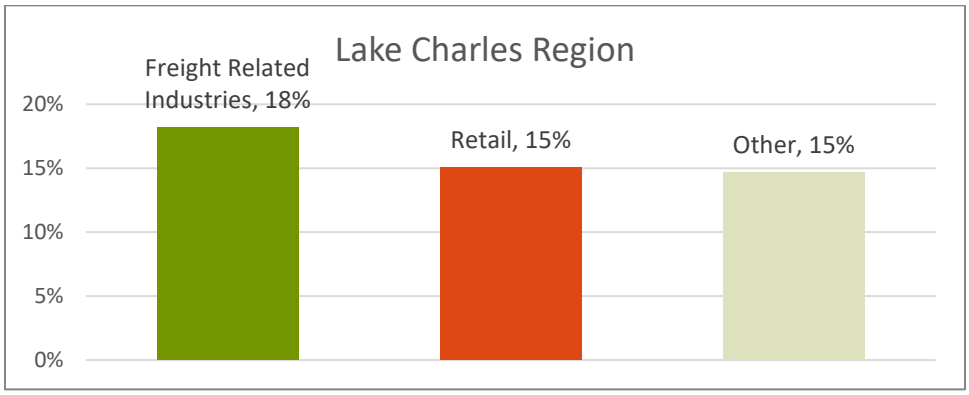
Source: Louisiana Workforce Commission, http://www.laworks.net/LaborMarketInfo/LMI_OccIndustryProj.asp?years=20122022
Notes: Baton Rouge Region includes: Ascension, E. Baton Rouge, E. Feliciana, Iberville, Livingston, Pointe Coupee, St. Helena, Tangipahoa, Washington, West Baton Rouge, and West Feliciana Parishes

Figure 9-5: Houma Region Projected Employment Change (2012-2022)



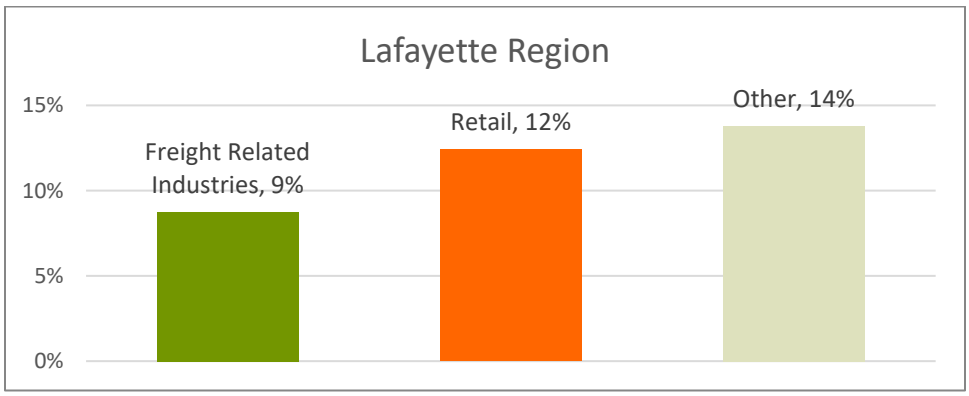
Source: Louisiana Workforce Commission, http://www.laworks.net/LaborMarketInfo/LMI_OccIndustryProj.asp?years=20122022
Notes: Houma Region includes: Assumption, Lafourche, & Terrebonne Parishes

Figure 9-6: Lake Charles Region Projected Employment Change (2012-2022)



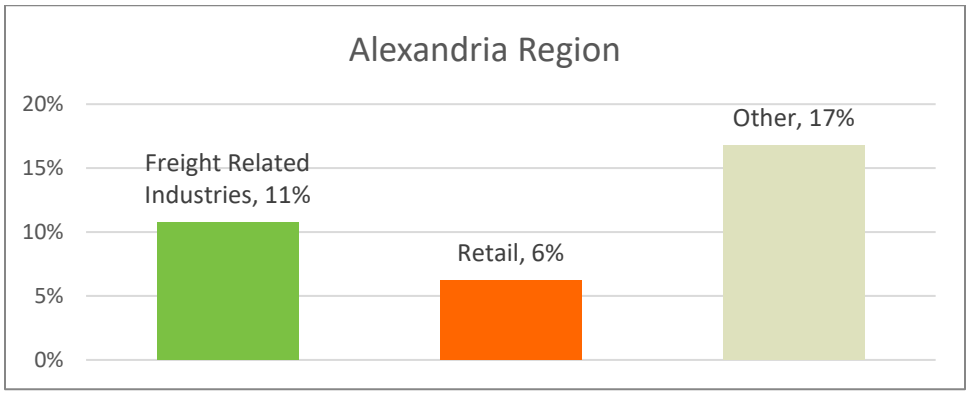
Source: Louisiana Workforce Commission, http://www.laworks.net/LaborMarketInfo/LMI_OccIndustryProj.asp?years=20122022
Notes: 1) Lake Charles Region includes: Allen, Beauregard, Calcasieu, Cameron, & Jefferson Davis Parishes

Figure 9-7: Lafayette Region Projected Employment Change (2012-2022)



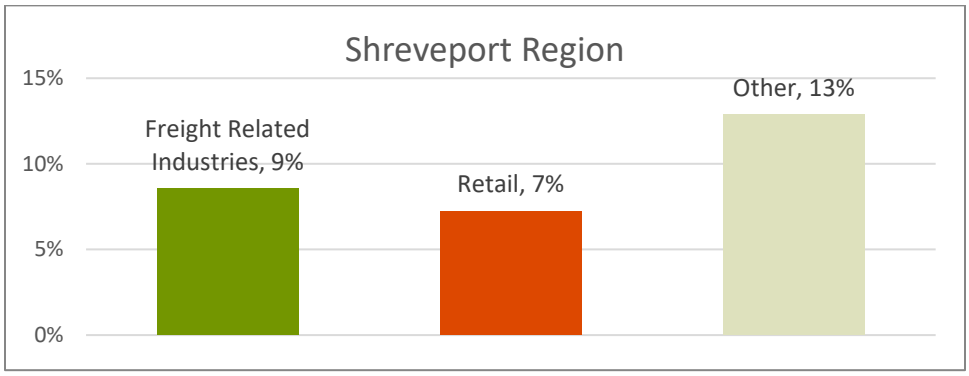
Source: Louisiana Workforce Commission, http://www.laworks.net/LaborMarketInfo/LMI_OccIndustryProj.asp?years=20122022
Notes: 1) Lafayette Region includes: Acadia, Evangeline, Iberia, Lafayette, St. Landry, St. Mary, St. Martin, & Vermilion Parishes

Figure 9-8: Alexandria Region Projected Employment Change (2012-2022)



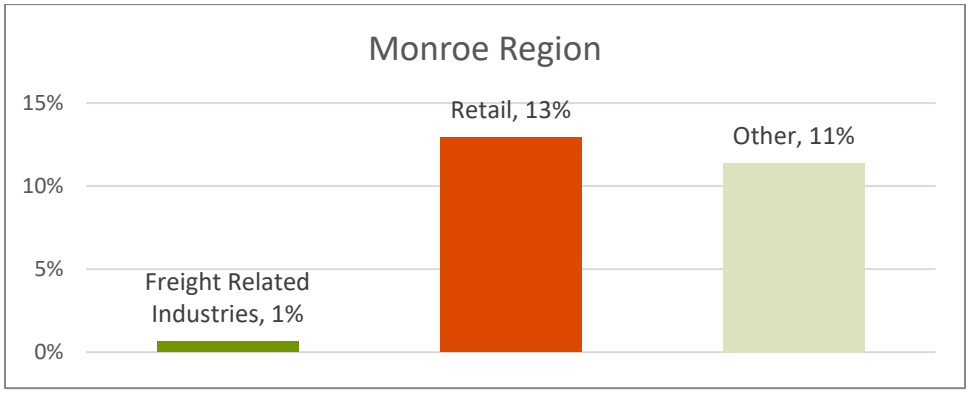
Source: Louisiana Workforce Commission, http://www.laworks.net/LaborMarketInfo/LMI_OccIndustryProj.asp?years=20122022
Notes: 1) Alexandria Region includes: Avoyelles, Catahoula, Concordia, Grant, LaSalle, Rapides, Vernon, & Winn Parishes

Figure 9-9: Shreveport Region Projected Employment Change (2012-2022)



Source: Louisiana Workforce Commission, http://www.laworks.net/LaborMarketInfo/LMI_OccIndustryProj.asp?years=20122022
Notes: 1) Shreveport Region includes: Bossier, Bienville, Caddo, Claiborne, Desoto, Lincoln, Natchitoches, Sabine, Red River, & Webster Parishes

Figure 9-10: Monroe Region Projected Employment Change (2012-2022)



Source: Louisiana Workforce Commission, http://www.laworks.net/LaborMarketInfo/LMI_OccIndustryProj.asp?years=20122022
Notes: 1) Monroe Region includes: Caldwell, E. Carroll, Franklin, Jackson, Madison, Morehouse, Ouachita, Richland, Tensas, Union, & W. Carroll Parishes

9.1.3 Economic Development

Freight transportation system investment is an important economic development strategy. With the projected increases in freight related industry employment expected to be over 10 percent statewide by 2022, the transportation system must keep up and also be responsive to the economic development aims of the state. By anticipating and addressing freight investment needs, policy makers can help create an operating environment for business that is attractive and sustainable, because it helps firms control logistics costs.

Louisiana Economic Development (LED) is a state agency within the Governor's Office with the responsibility to strengthen the state's business environment and economy, through job creation and the expansion of economic opportunities. LED is focused on eight economic development strategies[67]:

- Improve Louisiana's economic competitiveness
- Improve the competitiveness of Louisiana communities
- Identify and cultivate top economic development assets in each region
- Place special focus on business retention and expansion
- Develop comprehensive national-caliber business recruitment capacity
- Cultivate innovation, entrepreneurship, and small business
- Develop robust workforce solutions, and
- Tell the economic development story of Louisiana

LED has identified a number of traditional and emerging industries that are important to the on-going prosperity of the state. Many of these industries have significant impacts on the freight system and their growth could be helped or hampered by the performance of the system. The LED focus industries include:

- Aerospace
- Agribusiness
- Automotive
- Energy
- Entertainment
- Manufacturing
- Process Industries
- Software Development, and
- Water Management

There is a multitude of options to improve freight mobility, consistent with the LED's focus areas. These include improvements to access to businesses, operational improvements and increasing capacity in targeted freight corridors. The economic impact of these investments will vary, according to the significance of transportation as a cost factor in production, and the way that businesses take advantage of the improved accessibility, and efficiency that freight investments can provide. Ultimately, these improvements should be tied to the improved productivity of Louisiana businesses.

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[67] *http://www.opportunitylouisiana.com/index/about-led*.

Though not an economic development analysis, the freight plan's implementation section acknowledges the nexus between economic development and freight transportation, and provides options for measuring the relationship. **Table 9-4** categorizes freight transportation economic development impacts, evaluation methods, and strategies to achieve related economic development objectives.[68]

Table 9-4: Transportation Factors and Economic Development

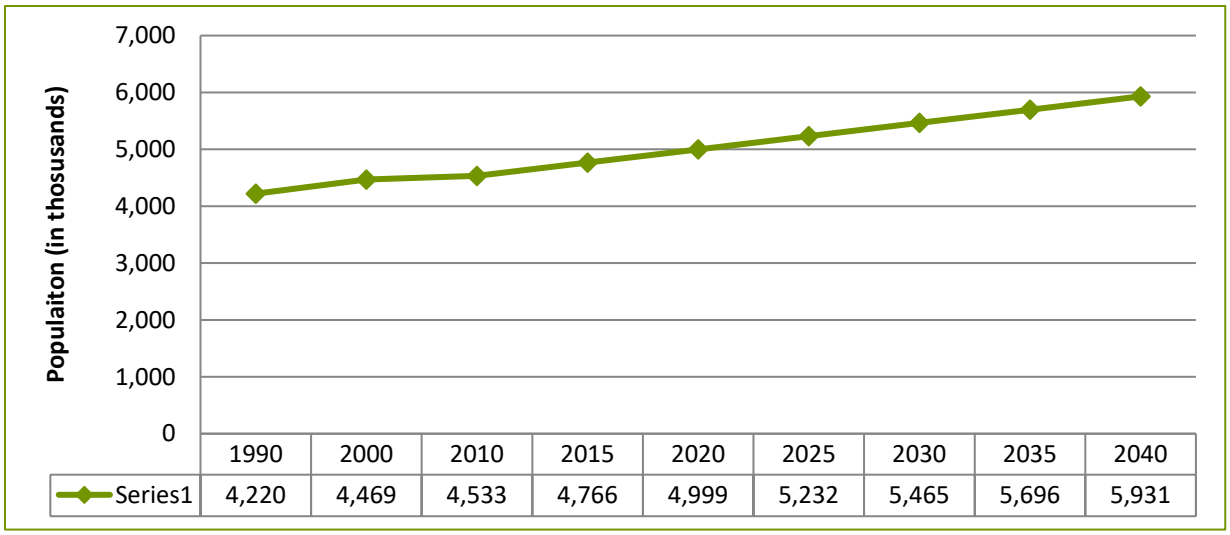
Factor	Description	Development Strategies
Project expenditures	Jobs and business activity caused by project expenditures	Favor policies and projects with greater job creation
Consumer expenditures	Impacts of future consumer transportation expenditures	Favor policies and projects that reduce future fuel and vehicle expenditures
Transportation project cost efficiency	Whether transportation investments repay costs and optimize value	Choose projects with high return on investment or benefit/cost ratios
Transportation system efficiency	Ratio of benefits to costs. Whether transportation policies support economic objectives	Use efficient pricing and policies that favor higher value trips (such as freight) and efficient modes
Retail and Tourism	Impacts on local retail and tourism industries	Improve access and travel conditions, reduce negative impacts
Impacts on specific industries	Impacts on specific industries and businesses (e.g. oil, gas, vehicle manufacturing, etc.)	Identify potential negative impacts and mitigation strategies
Property values and development	Whether policies and projects increase real estate values and development	Support projects that increase property values. Capture value for transport project funding.
Land use objectives	Support for more accessible, efficient land use development	Favor projects that support strategic land use objectives

[68] *Source: Litman, Todd, Victoria Transport Policy Institute, Evaluating Transportation Economic Development Impacts: Understanding How Transport Policy and Planning Decisions Affect Employment, Incomes, Productivity, Competitiveness, Property Values and Tax Revenues, August 2010, p1.*

9.1.4 Projected Population and Employment Trends

Population growth is forecasted to increase approximately 1.02 percent annually. **Figure 9-11** shows both the historic and projected population through year 2040.

Figure 9-11: Louisiana Population, 1990 to 2040

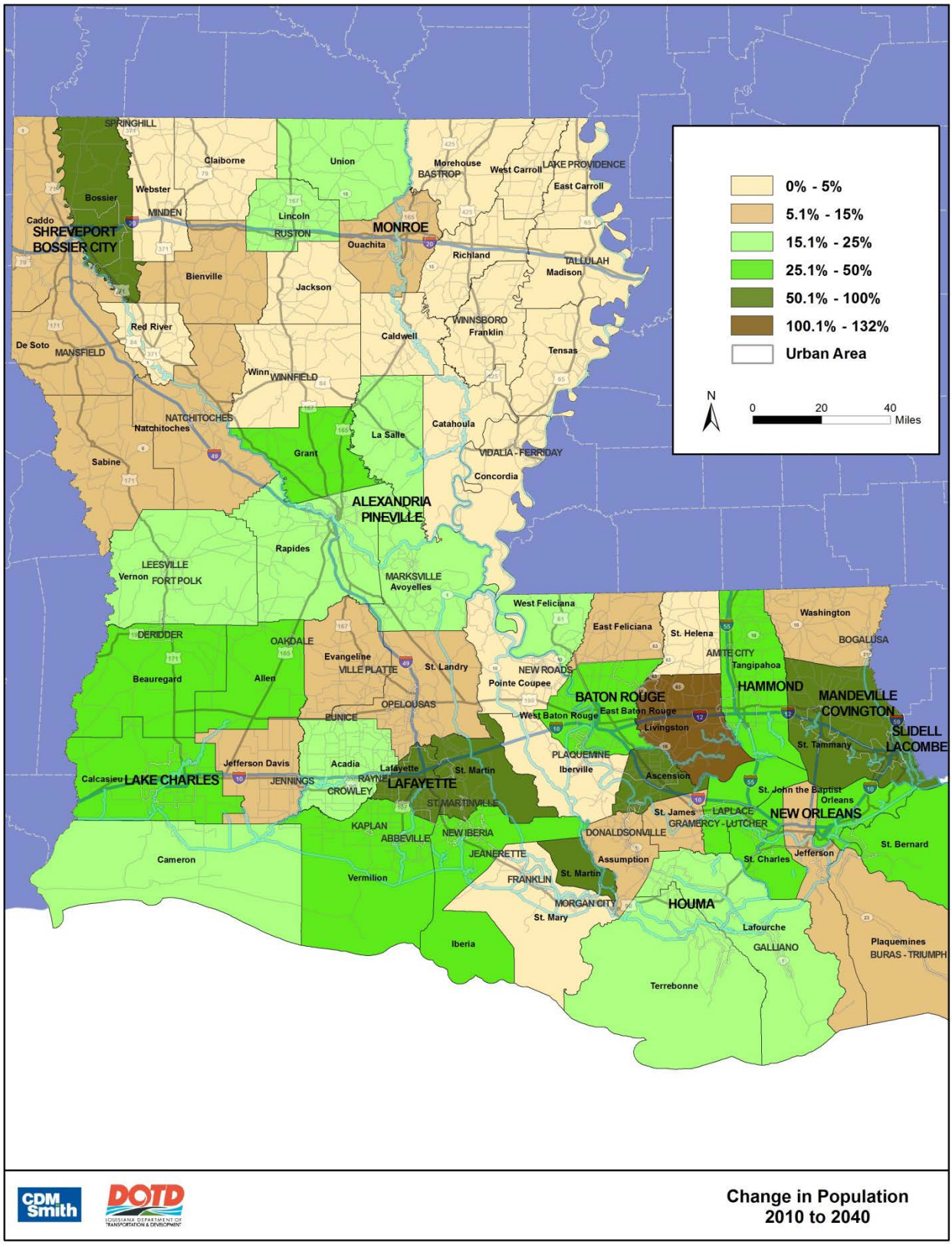


	1990	2000	2010	2015	2020	2025	2030	2035	2040
Series1	4,220	4,469	4,533	4,766	4,999	5,232	5,465	5,696	5,931

Source: GCR Inc., CDM Smith, and Woods and Poole, Inc. 2014
Note: Louisiana population forecasts reflect historical trends, MPO forecasts and consultant team's analysis of future growth potential.

According to the 2040 forecasts, Louisiana's population is expected to grow from 4.5 million to 5.9 million persons over the next 30 years, with most of the growth concentrated in the state's urbanized areas. **Figure 9-12** presents the estimated change in population from 2010 to 2040, by parish.

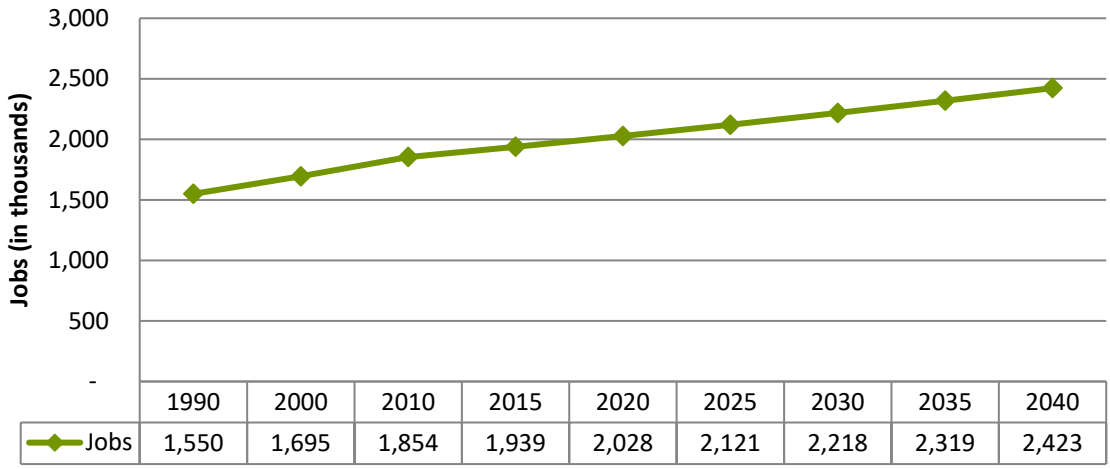
Figure 9-12: Change in Population by Parish, 2010-2040, Louisiana



Source: GCR Inc., CDM Smith, and Woods and Poole Inc., 2014

Louisiana has seen moderate employment growth over the past two decades. Between 1990 and 2010, the state's employment grew at an annual average of 1.2 percent. This moderate pace is expected to continue through horizon year 2040 (**Figure 9-13**).

Figure 9-13: Louisiana Employment, 1990 to 2040

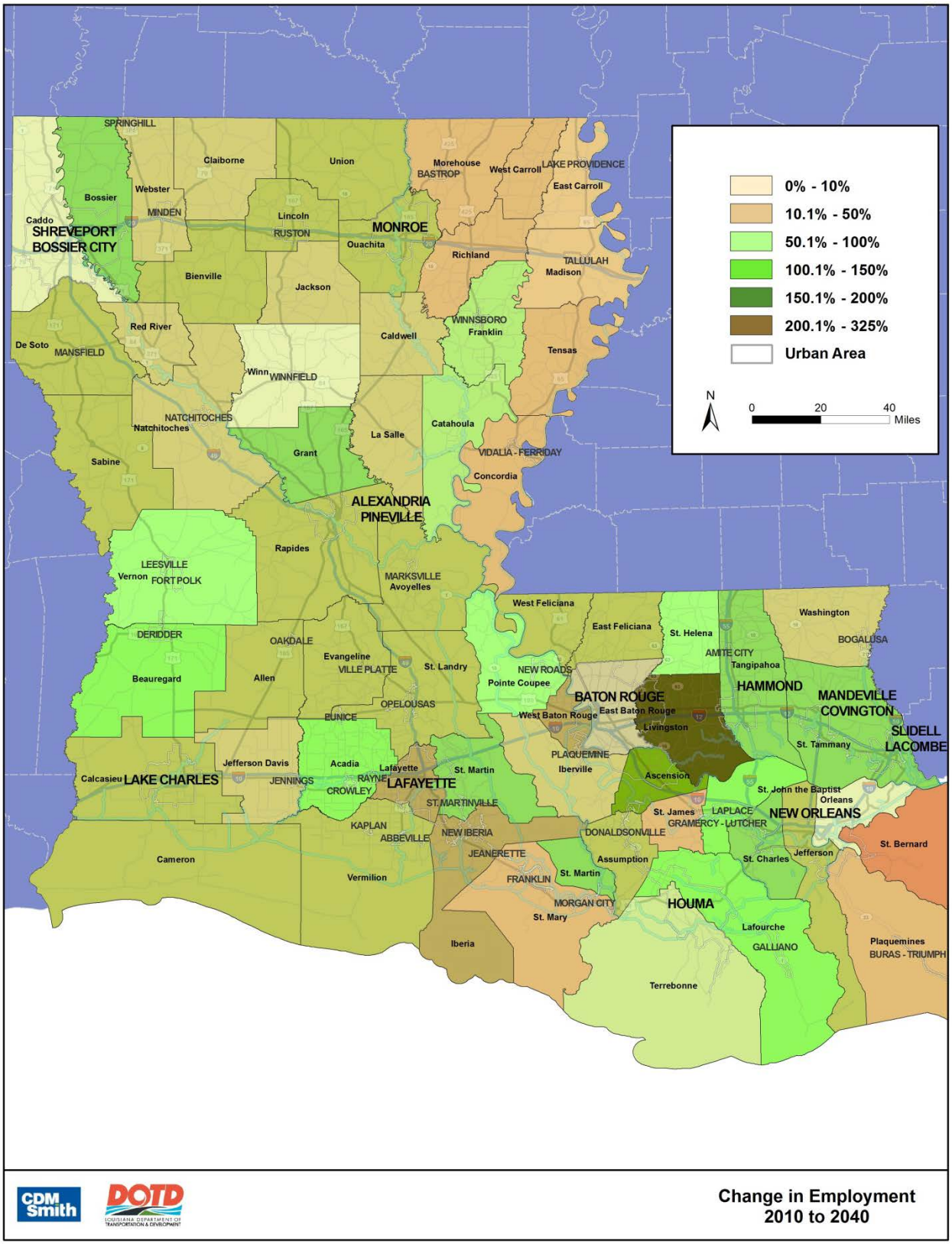


	1990	2000	2010	2015	2020	2025	2030	2035	2040
Jobs	1,550	1,695	1,854	1,939	2,028	2,121	2,218	2,319	2,423

Source: GCR Inc., CDM Smith and Woods and Poole Inc., 2014
Note: Louisiana employment forecasts reflect historical trends, MPO forecasts and consultant team's analysis of future growth potential.

Figure 9-14 shows the estimated change in jobs from 2010 to 2040. According to the 2040 forecasts, Louisiana's job growth is expected to grow from 1.8 million to 2.4 million jobs over the next 30 years, with the Livingston, Ascension and St. Tammany parishes expected to grow at higher rates than many of the other parishes.

Figure 9-14: Change in Employment by Parish, 2010-2040, Louisiana



Source: GCR Inc., CDM Smith, and Woods and Poole Inc., 2014

9.2 Challenges

The Plan team drew on input from the Freight and Statewide Plan committees and research to identify and summarize the challenges that Louisiana's freight modes face now and are likely to face in the future. The freight-related issues and areas of concern for trucking, rail freight, ports and waterways, and aviation follows.

9.2.1 Highways

Because nearly every freight shipment travels by truck at some point in its delivery, challenges on the highway system can cause ripples through the state's freight transportation system and the economy. Delay, safety, and access issues raise costs for shippers, carriers, manufacturers and consumers alike. Some of the challenges identified in Louisiana are described below.

Pavement and Bridge Maintenance

Substandard bridges and pavement may cause cargo damage and truck detours that increase distances and increase delivery times. Eleven percent of DOTD bridges are below a 50 sufficiency rating and are candidates for replacement.

The FHWA has issued a proposal to set minimum national standards for pavement and bridge conditions specific to pavement smoothness and the structural integrity of bridges. The initiative is one of three rulemakings mandated by MAP-21 that are aimed at establishing national performance management process to guide improvements on the national highway system. Once standards are adopted, states will be required to report on pavement and bridge conditions to the USDOT. If reported pavement and bridge conditions fail to meet the established minimum national standard, Louisiana will be required to dedicate highway formula funds to improve these conditions and lose the flexibility MAP-21 provides to use these funds on other activities.[69]

Truck Size & Weight Limits

Increases in the size and weight of vehicles may improve freight efficiency, but they may also have a lasting impact on roadway quality and may compromise safety. In addition, heavier and larger trucks require route plans that may necessitate the need for lengthy detours due to weight limits, or vertical or horizontal clearances. Louisiana's roadway system is relatively well equipped to handle the current truck traffic, particularly in urban areas. In rural areas however, infrastructure that was built decades ago may struggle to handle the loads particularly as the natural gas industry begins to access drilling sites that require access to these roadways and bridges.

Incident Management

Incident management describes the coordinated activities of transportation and emergency and law enforcement agencies to respond to accidents, highway construction and incidents such as hurricanes. Proper planning and investment in incident management can decrease the response times to emergencies and can help restore a corridor to pre-incident flow rates quickly. Statewide and regional transportation planning for disasters, emergencies, and significant events provide a framework for comprehensive, multi-jurisdictional, multi-disciplinary preparedness, response, and management for a

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[69] *American Road & Transportation Builders Association (ARTBA), January 2015*

wide range of incidents that affect freight transportation systems in Louisiana. Providing solutions that address all hazards will support transportation system management, congestion management, and emergency response preparedness. Barriers to better incident management exist within Louisiana such as manpower, funding limitations, lack of best practices knowledge, and bureaucracy/coordination issues.

Limited Availability of Truck Parking

Hours of service regulations for truck drivers requires off-duty times for rest. The limited availability of parking may result in trucks parked on ramps and shoulders, which may present a safety risk. An inventory of parking supply conducted by a recent FHWA report[70] notes that Louisiana has the 6th highest number of commercial truck parking spaces (12,111) being accommodated by 21 public facilities and 254 private facilities. This is up from 9,380 spaces reported in 2002[71]. Further, Louisiana has the highest quantity of truck parking spaces per 100K Daily Truck VMT (151.7) and the highest quantity of truck parking spaces per 100 miles of NHS (359.2) than any other state. However, the location of truck parking facilities is critical, especially in urban locations where the current supply may not be adequate in high demand locations.

Overall Condition & Design of Roadway Infrastructure

As the economy grows and new industries are established, the highway system will be expected to carry more freight. Heavy-use truck routes often experience rough pavement, tight turning radii, narrow lane width, short ramps, inadequate merging lanes, lane restrictions and overall capacity issues. Improvements to address issues can range from small scale intersection improvements to the rebuilding and expanding of long stretches of highway links.

Improved Connectivity

Intermodal connectivity allows the freight system to operate more efficiently by increasing the mode choices and speed at which goods move throughout the state. In Louisiana, issues exist with routes and infrastructure to rail yards, ports, airports, and industry clusters. Improving these connections will increase the velocity of freight, reduce transportation costs and positively impact freight-reliant industries.

Additional Transportation Funding Mechanisms

Louisiana is not unique in terms of transportation funding shortfalls. Transportation needs far outweigh the resources available and, historically, freight needs have not received separate attention from transportation in general. There is a freight specific need for additional transportation funding mechanisms, particularly for highway maintenance and construction. In addition, funding programs are often prescribed for specific types of projects or modes, limiting the ability to fund some high priority projects. Multimodal transportation funds, which can be used for transportation projects on a competitive basis regardless of mode, have begun to gain popularity in other states.

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[70] *"Jason's Law Truck Parking Survey Results and Comparative Analysis", FHWA, August 2015*
[71] *"Study of Adequacy of Commercial Truck Parking Facilities", Publication Number: FHWA-RD-01-158, FHWA, March 2002*

9.2.2 Freight Rail

Over 7 percent of all freight moves by rail in Louisiana, and if a catastrophe were to strike the rail system, the roadway system would be capable of carrying very little of it. While the rail system is owned and operated by the private sector, the public sector has an interest in maintaining and improving its viability, because rail investments can save money on roadway preservation and capacity over the long run. Addressing the rail system's challenge to improving efficiency can help accommodate expected growth while meeting the safety and performance goals established in this Plan.

Grade Crossing Safety

Of the more than 2,700 at grade highway/rail crossings in Louisiana, 49 percent have signing only, with no flashing lights or gates. Improving the crossings' warning systems or eliminating at-grade crossing would address potential safety conflicts.

Terminal Capacity Constraints

Freight rail relies heavily on the intermodal connections with trucks. The transfer of bulk commodities such as grain, coal, oil, etc. requires adequate intermodal operations capacity to move goods from production facilities to consumption markets. Intermodal terminal capacity constraints will reduce efficiency, ultimately increasing costs.

Limited Rail Weight Limits

The short line railroads' inability to accommodate 286,000 lb. standard rail cars limits growth and creates chokepoints at rail switching locations with Class I railroads which can accommodate the standard sized rail car. Rail shipments that use these lines require extra planning so as not to exceed weight limits, resulting in more time for processing, and increased costs.

Rail Funding

Although there are some federal funding mechanisms for rail improvements and state funding for rail crossing improvements, there is no state fund set aside for rail capacity improvements. A state rail program to take advantage of federal programs that require a match would help address the 286k track limitations that the system faces. Also, DOTD could assist short line railroads to sponsor rail improvement projects for federal funding. This is permitted in the Passenger Rail Investment and Improvement Act of 2008 (PRIIA).

Intermodal Terminal Development and Multimodal Diversity

Addressing the need for rail access improvements to ports is a challenge but necessary to compete with ports in other states. Improved intermodal terminal development could improve access to the national rail system.

Leadership, Support and Education

Although the freight system operates every day in all parts of the state, very few people understand how it works or its importance. Educating the public and elected officials about the importance and needs of the freight system could build support for freight investments.

9.2.3 Ports and Waterways

A third of all freight tonnage moving in Louisiana is carried on its waterways and through its ports. In addition, most major urban areas are linked to a navigable waterway. Channel deepening and aging infrastructure are among the issues facing the ports and waterways system.

Mississippi River, Coastal Waterways and Access Channel Deepening

Just as a 2-lane roadway carries less traffic than a 4-lane highway, an 8-foot channel can carry far less barge traffic than a 20-foot channel. Waterway deepening increases throughput and efficiency, by allowing barges and ships to carry more freight per unit. The use or disposal of dredge material can be better managed by applying best practices from around the country

Aging Locks

From a transportation/logistics point of view locks function like traffic signals. They stop barge traffic for sometimes lengthy periods of time. Some antiquated locks limit the length of a string of barges, and require larger barge to make multiple trips.

Landside Freight Handling

Several ports have limited landside freight handling capacity and equipment, such as cranes, conveyors, etc. Since Post Panamax ships require a minimum of a 43-foot draft (50 feet is considered post-Panamax ready), at 45 feet the Port of New Orleans is the only Louisiana port that can accommodate such ships. Port landside capacity to handle the 8,000 TEUs (twenty-foot equivalent units) from each ship would require a complete overhaul to be able to load and unload the cargo quickly.

Port/Waterway Ownership and Operation

Port facilities are primarily private lessee operators of public port authority terminals, and there are multiple federal, state and local actors with a hand in planning and operating the port and waterway system. Streamlining the process for creating permits, grants, and agreements between the ports, state agencies, the U.S. Army Corps of Engineers, other federal agencies and the private sector could be beneficial for shippers and receivers of waterborne freight. Also, limited hours of port operations often cause congestion in urban areas, particularly in New Orleans, as a result of trucks entering and leaving the ports during peak travel periods of the day.

9.2.4 Air Cargo

Though small in volume, airborne freight has by far the highest value per ton of any mode. Typical commodities include goods from the pharmaceutical, automotive, and high-tech manufacturing sectors as well as the consumer parcel delivery services. Moving goods by air is expensive and the industry responds to the forces of supply and demand. This is not unique to Louisiana but an industry wide fact of life.

Domestic Airline Space Availability

The availability of domestic airline carriers belly space is declining due to the increased use of regional jets offering limited cargo capacity. The smaller jets are less costly to operate for short haul passenger movements, but they have little or no space for cargo. This reduced capacity, paired with improvements in truck logistics, has resulted in the U.S. Postal Service scaling back the amount of mail it moves by air.

Intermodal Connections

In general, the constraints in land side access to airports occur outside the airport properties where trucks navigate the regional and local roadway systems. Access to transfer facilities and equipment at Louisiana's freight-capable airports appears to be good.

10. FREIGHT IMPROVEMENT STRATEGY

In essence, the recommended freight improvement strategy for Louisiana is to improve the infrastructure that is most beneficial to freight movement. The Louisiana Freight Mobility Plan has identified freight deficiencies, assessed how they may be addressed by current plans and programs, and considered their place in one of the Plan's tiered networks. This approach encourages the selection and funding of projects that benefit freight movement. Maintenance and preservation of the existing freight transportation system is also a major consideration.

In addition, the State will invest in infrastructure that is critical to the growth of existing key industries. This may include linkages that go beyond local, regional, or state borders. The DOTD recognizes that supporting existing industries also positions the state to attract businesses and industry that may emerge in the future. **Table 10-1** shows the key industries that are the focus of the freight transportation investment strategy for Louisiana.

Table 10-1: Key Louisiana Industries

Industry	Description
Industrial Capacity	Louisiana has the greatest concentration of crude oil refineries, natural gas processing plants and petrochemical production facilities in the Western Hemisphere.
Petroleum and Petroleum Refining	Louisiana is America's third largest producer of petroleum and the third leading state in petroleum refining.
Offshore Oil Production	Louisiana pioneered offshore oil and gas exploration and drilling. The first well ever drilled out of sight of land was off the Louisiana coast. Most of the techniques used in offshore oil exploration around the world today were developed in Louisiana.
Natural Gas	Louisiana is America's second largest producer of natural gas. It supplies slightly more than one-quarter of the total U.S. production.
Agriculture	The most valuable crop is soybeans, followed by cotton and sugarcane. Louisiana is among the top ten states in production of sugar cane, sweet potatoes, rice, cotton, and pecans.
Ports	Louisiana has the nation's farthest inland port for sea-going ships (Baton Rouge) and America's only port capable of handling superships (the LOOP).
Chemicals	Louisiana produces 25 percent of the nation's petrochemicals. Total value of Louisiana chemical shipments is more than $14 billion a year.
Commercial Fishing	Louisiana's commercial fishing industry produces 25 percent of all the seafood in America.
Shrimp	More shrimp are caught in Louisiana waters than in any other place in America.
Oysters	Louisiana's oyster production is the highest in the U.S.
Freshwater Fishing	Louisiana has the biggest and most diversified freshwater fisheries production in America.
Grain Exports	Louisiana is the nation's largest handler of grain for export to world markets. More than 40% of the country's grain exports move through the ports of Louisiana.

Source: http://doa.louisiana.gov/about_industry.htm

10.1 Needs Identified

Developing an investment strategy starts by identifying needs. These needs can correspond to a policy, program or project. A policy is an institutional direction, initiative or directive that focuses on particular issues directly impacting freight transportation. A program is the organization of a funding initiative targeted at achieving certain outcomes, often with its own set of funding requirements, process requirements and organizational structure. A project is an improvement to the state's freight transportation infrastructure that would typically be identified in the State's capital improvement program.

The freight needs identified in this plan were derived from several sources. One important source was the freight stakeholder community as represented by the Freight Advisory Committee. The FAC helped the plan team identify current transportation deficiencies and transportation investment opportunities to improve economic performance. A second source was the technical analysis of current and future freight transportation needs, which was performed using freight demand forecasts, and the various tools and models available to the team. A third source was two special-purpose surveys: one with representatives of the trucking industry and a second with port operators.

Existing plans and studies were a fourth source of information used for the freight needs analysis. During the Plan's technical analysis, the plan team reviewed the multimodal needs described in the Louisiana Statewide Transportation Plan, and incorporated the elements of that plan that correspond to the needs identified on the tiered freight network. Many of these needs are categorized by mode because of their suitability to specific federal agency funding sources and programs. However, some are multimodal, and promote better linkages between modes. The Plan's modal needs were informed by the following plans:

- 2015 Louisiana Statewide Transportation Plan
- 2015 Louisiana Aviation System Plan
- 2015 Louisiana State Rail Plan
- 2007 Louisiana Marine System Plan

The 2015 Louisiana Statewide Transportation Plan and the 2015 Louisiana Freight Mobility Plan both identify and discuss freight needs, but there are important differences in the way freight needs are defined in the two plans. The Freight Plan includes any project in the Highway Priority Program that is on a freight network tier, of benefit to freight transportation. It also includes the Priority A and B megaprojects that appear on a freight tier and that will benefit freight transportation. The STP does not include specific highway projects or megaprojects in the needs estimate, but rather shows the implementation of megaprojects as contingent on funding availability. This discussion appears in a separate section of the STP that describes funding scenarios.

The needs and projects in this Plan, if addressed, will benefit freight and improve economic performance. Freight-related projects were also derived from the DOTD Interstate letting list according to freight tier. The policy, programming and project needs for each freight mode are described in this section. **Table 10-2** lists the description of what project needs are included in the Louisiana Freight Mobility Plan.

Table 10-2: Type of Needs Included in the Louisiana Freight Mobility Plan

Need	Description of What is Included
Pavement	Projects from the HPP on the tiered network, that (if not completed) would hamper freight movement.
Bridges	Projects from the HPP on the tiered network that (if not completed) would hamper freight movement.
Highway Capacity	All highway capacity adding projects from the HPP on the tiered freight system and megaprojects on the tiered system
Rail Projects	All projects from the 2015 Rail Plan
Transit	Transit projects are not included.
Ports/Waterways	Freight port and waterway projects identified in the 2015 Louisiana STP
Aviation	Freight-related aviation system plan needs, from the 2015 Aviation Systems Plan.

10.1.1 Highway Freight Needs

The following trucking needs were derived from the trucking advisory council meetings during the development of the 2015 Louisiana STP, those identified by the Freight Advisory Committee, and through the data analysis within this Freight Mobility Plan. A list of freight improving highway capital projects is shown in **Appendix B**. It is expected that this will be a working list of projects during the life of the Plan's implementation and amended on an on-going basis. These amendments will include projects that meet the criteria for a freight project as they meet the strategic goals and objectives defined in **Chapter 2**, and the definition of freight projects and prioritization outlined in **Chapter 4**. **Table 10-3** shows the policy, program and general project needs for the highway freight system in Louisiana.

The list of projects in **Appendix B** summarizes highway projects that improve safety, mobility, and capacity for tiered freight highway system as defined in **Chapter 5**. On-going maintenance projects along heavily traveled truck routes such as pavement patching and sealing, and bridge painting are not included. This list totals about $32.6 billion in highway transportation needs. Congested locations have been identified using the National Performance Management Research Data Set (NPMRDS) speed data for the Freight Mobility Plan.

Table 10-3: Highway Freight Needs Summary

Category	Need	Strategic Goals Addressed					Importance		
		Economic Competitiveness & Efficiency	Safety & Security	Preservation & Maintenance	Environmental Stewardship	Performance & Accountability	High	Med	Low
Policy	Ensure trucking representation and participation by private sector in the state and MPO planning processes	●	●	●	●	●	●		
Policy	Re-establish Motor Carrier Advisory Committee	●	●	●	●	●		●	
Policy	Collaboration between DOTD and LED on identifying transportation needs, issues and impacts when recruiting industry/business into the state	●				●	●		
Program	Assist in the funding of private sector conversion from diesel/gasoline to LNG/CNG, propane, or other alternative fuels and improve access to these fuels to support commercial transportation	●			●			●	
Program	Increase funding for roadway and bridge maintenance and construction			●			●		
Program	Improve incident management		●					●	
Program	Develop seamless and uniform electronic credentialing, permitting, registrations, license plates, etc.		●			●		●	
Program	Develop a process to identify, monitor, and restore condition of special truck routes that support the energy and mining industry	●		●		●	●		

Table 10-3 Continued

Category	Need	Strategic Goals Addressed					Importance		
		Economic Competitiveness & Efficiency	Safety & Security	Preservation & Maintenance	Environmental Stewardship	Performance & Accountability	High	Med	Low
Project	Improve pavement and bridge conditions on freight routes		●	●			●		
Project	Revise/improve roadway designs and accommodations for large trucks at intersections and roundabouts		●		●	●		●	
Project	Relieve statewide bottlenecks to decrease truck travel times	●			●	●		●	
Project	Improve quality of connectivity of the highway system to ports and rail yards	●				●	●		
Project	Relocate, redesign and/or construct of weigh stations at Louisiana borders		●				●		
Project	Increase supply of truck parking		●					●	

10.1.2 Rail Freight

The following rail freight needs were derived from interviews conducted during the development of the 2015 Louisiana STP, the 2015 Louisiana State Rail Plan, those identified by the Freight Advisory Committee, and through the data analysis within this Freight Mobility Plan. A list of rail freight capital projects is shown in **Appendix C**. As with highway projects, it is expected that this will be a working list of projects during the life of the Plan's implementation and amended on an on-going basis. These amendments will include projects that meet the criteria for a freight project as they meet the strategic goals and objectives defined in **Chapter 2**, and the definition of freight projects and prioritization outlined in **Chapter 4**. **Table 10-4** shows the policy, program and general project needs for the rail freight system in Louisiana.

The list of projects in **Appendix C** summarizes rail freight projects on the tiered rail system that improve safety, mobility, and capacity on the Louisiana rail system. On-going maintenance projects such as tie and ballast replacement are not included. The rail freight capital projects total about $1.15 billion in needs.

Table 10-4: Rail Freight Needs Summary

Category	Need	Strategic Goals Addressed					Importance		
		Economic Competitiveness & Efficiency	Safety & Security	Preservation & Maintenance	Environmental Stewardship	Performance & Accountability	High	Med	Low
Program	Establish a dedicated rail improvement funding program within DOTD	●	●	●	●	●	●		
Project	New Orleans Rail Gateway	●	●	●	●	●	●		
Policy	Leverage public-private partnerships for funding rail improvements	●				●		●	
Policy	Encourage economic development through investments in the rail system, e.g., improved access to marine and river ports, new intermodal facilities, and new industrial leads and spurs	●				●		●	
Program	Develop a rail safety program to minimize accidents, injuries, and fatalities at highway-rail grade crossings in Louisiana through crossing closures, safety improvements and grade separations		●				●		
Program	Increase the number of miles of track capable of 286,000-pound car weights on the state's short line railroads	●				●	●		
Project	Shortline railroad track and safety upgrades	●				●		●	
Project	New Orleans & Gulf Coast Railroad Relocation	●	●	●			●		
Project	Class I Rail crossing safety and grade separations		●			●		●	

10.1.3 Ports and Waterways

The ports and waterways needs (**Table 10-5**) were derived from the 2007 Louisiana Marine Transportation Systems Plan, the Ports and Waterways Advisory Council of the 2015 Louisiana STP, the Freight Advisory Committee and the Louisiana Ports Survey conducted in December 2014. A list of port capital projects is shown in **Appendix D** which is also expected to be a working list during the life of the Plan's implementation and updated as needed in compliance with this plan's goals and prioritization criteria.

The list of projects in **Appendix D** summarizes port and waterway freight projects that improve safety, mobility, and capacity for the tiered Louisiana ports and waterways. On-going maintenance projects at the ports are not included however maintenance for waterways such as dredging are included. The port and waterway projects total about $7.5 billion in needs.

Table 10-5: Ports and Waterways Freight Needs Summary

Category	Need	Strategic Goals Addressed					Importance		
		Economic Competitiveness & Efficiency	Safety & Security	Preservation & Maintenance	Environmental Stewardship	Performance & Accountability	High	Med	Low
Policy	Study the economic competitiveness of Louisiana ports	●						●	
Policy	Work with LA Department of Economic Development (LED) and others to address peak hour roadway congestion by extending hours of port operations (i.e. Port of New Orleans)	●			●	●			●
Policy	Support multi-state coordination of infrastructure improvements along the Mississippi River corridor and tributaries	●		●		●	●		
Policy	Establish a Statewide Maritime Marketing Program	●							●
Project	Support the development of major container terminals and distribution centers through individual port authorities	●						●	
Program	Implement the recommendations of the Louisiana Marine Transportation Systems Plan	●	●	●	●	●	●		
Program	Increase funding for the Port Priority Program	●		●		●	●		
Program	Continue to work through partnerships to increase funding for and utilization of the inland waterway system and of coastal ports	●				●	●		
Program	Support public-private partnerships for maritime facility investment, including distribution centers, through tax credits and other tax incentives	●		●				●	

Table 10-5 Continued

Category	Need	Strategic Goals Addressed					Importance		
		Economic Competitiveness & Efficiency	Safety & Security	Preservation & Maintenance	Environmental Stewardship	Performance & Accountability	High	Med	Low
Policy	Support the full appropriation in the Harbor Maintenance Trust Fund for maintenance of navigation channels	●		●			●		
Program	Maintain a minimum balance of $25 Million in Priority 2 of the State Capital Outlay Program for navigation and port related freight rail capital projects in accordance with a priority program developed by DOTD and approved by the Joint Transportation Committee	●		●		●	●		

10.1.4 Air Cargo

The aviation/air cargo needs (**Table 10-6**) were derived from the 2015 Louisiana Aviation System Plan and the Aviation Advisory Council from the 2015 Louisiana STP. A list of air cargo capital projects is shown in **Appendix E** which is also expected to be a working list as the plan is implemented over the next five years in compliance with this Plan's goals and prioritization criteria.

Projects funded by passenger facility charges (PFC), which are collected at all seven commercial service airports in Louisiana, were estimated through the forecast of enplanements for the state. Assuming that these airports continue to collect PFCs through 2043, it is estimated that these funds will support $916 million in project needs. Upkeep and maintenance of airport pavement, which includes runways, taxiways, and aprons at the system airports, is expected to cost approximately $534 million out to 2043.

Table 10-6: Air Cargo Freight Needs Summary

Category	Need	Strategic Goals Addressed					Importance		
		Economic Competitiveness & Efficiency	Safety & Security	Preservation & Maintenance	Environmental Stewardship	Performance & Accountability	High	Med	Low
Policy	Consider the public/private development of intermodal transportation center(s) in Louisiana	●							●
Policy	Support an ongoing annual appropriation to support the General Aviation & Air Carrier Maintenance Programs		●	●				●	
Policy	Support a reauthorization of the Federal Airport Improvement Program that best benefits Louisiana aviation	●	●	●		●	●		
Policy	Provide state support for commercial service airport development in accordance with approved master plans	●		●		●		●	
Policy	Update Statewide Economic Impact of Aviation Study every 3 to 5 years	●						●	
Policy	Update the Louisiana Aviation System Plan every 5 to 10 years	●	●	●	●	●	●		
Policy	Conduct a review of the DOTD Aviation Section meteorological tower policies in comparison with other states		●			●		●	
Program	Develop aviation marketing program, using General Fund monies, to attract additional air service, air cargo, and aerospace companies	●							●
Program	Increase the level of funding to accommodate needs of Louisiana's aviation system	●	●	●	●	●	●		

Table 10-6 Continued

Category	Need	Strategic Goals Addressed					Importance		
		Economic Competitiveness & Efficiency	Safety & Security	Preservation & Maintenance	Environmental Stewardship	Performance & Accountability	High	Med	Low
Program	Develop and implement a pavement management system that predicts pavement needs and costs		●	●		●	●		
Project	Runway extensions particularly for Shreveport Regional	●	●					●	
Project	Aircraft maintenance provision particularly at New Orleans Louis Armstrong International Airport		●	●				●	
Project	Increase hangar space	●						●	
Project	Improve intermodal connectivity and access from general aviation airports to rail and interstates	●	●			●		●	

10.2 Highway Priority Program Projects that Address Freight Transportation Needs

In an effort to address highway congestion-related freight transportation needs, projects that have already been programmed within the Highway Priority Program (HPP) were compared with the needs of the freight bottleneck analysis described in **Chapter 6**. The intent is to determine which HPP projects may help to alleviate to some degree the bottlenecks identified (**Table 10-7**).

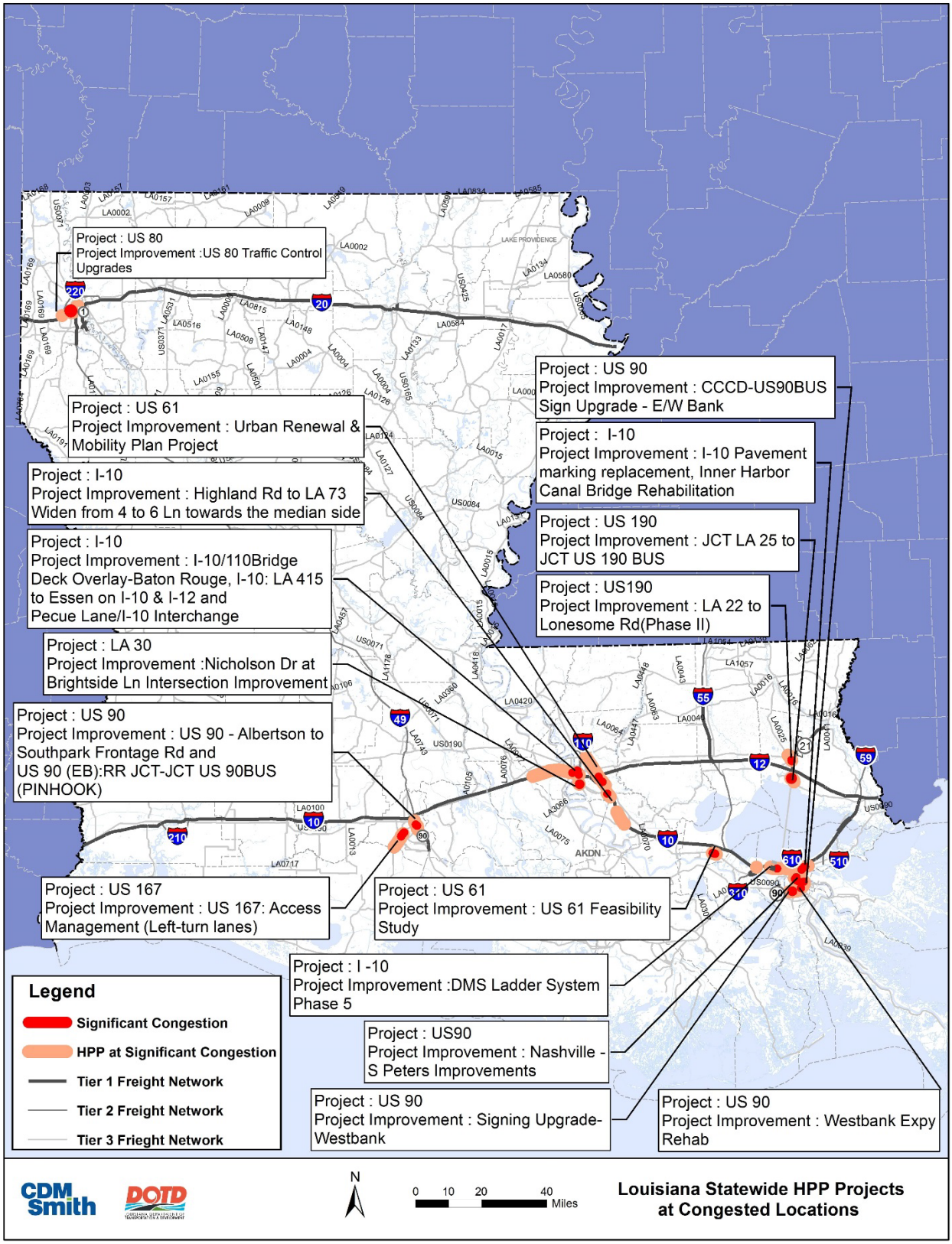
Table 10-7: Congested Locations by Interstate in the Evening Peak Hour, 2014

Median PM Peak Speed	Interstate Location
15 Miles Per Hour (MPH) and Below	• I-10/I-12, Baton Rouge • I-10, New Orleans
15 to 25 MPH	• I-49/I-20 Interchange, Shreveport • I-10/I-110 Interchange, Baton Rouge • I-10, New Orleans
25 to 35 MPH	• Portions of I-20 in Shreveport, Ruston, Monroe and MS State Line • Portions of I-49 in Shreveport, Natchitoches, LA 8 Interchange, Opelousas and Lafayette • Portions of I-220 through Shreveport • Portions of I-10 at TX State Line, Lake Charles, Lafayette to Atchafalaya Basin Bridge, Grosse Tete, LaPlace, I-55 to I-310, and New Orleans East • Portions of I-55 in Kentwood, Amite, and Hammond • I-12/I-55 Interchange • Portions of I-12 in Denham Springs, Walker, Livingston, Hammond and Covington • I-310 from US 61 to US 90
35 to 45 MPH	None
45 MPH and Above	Remaining portions of I-20, I-49, I-210, I-10, I-110, I-12, I-55, I-310, I-610

Source: National Performance Management Research Dataset

The HPP projects that assist in reducing congestion at these freight bottlenecks should be a high priority for completion. They have been identified as necessary for general mobility improvement, are funded, and also address truck freight transportation needs. A map of capital projects and their relationship to the major congestion locations is shown in **Figure 10-1.**

Figure 10-1: Highway Priority Program (HPP) Projects at Congested Locations



Source: National Performance Management Research Dataset

10.3 Megaprojects that Address Freight Transportation Needs

The 2015 Louisiana STP identifies major transportation improvements or "megaprojects" that have been proposed throughout the state. For the purposes of the STP, a megaproject is a very expensive or large-scale transportation improvement that would have a regional or statewide impact and require special funding outside of normal DOTD funding mechanisms. A transportation improvement included as a megaproject in the STP may be eligible for further study and possibly implementation, should additional state or federal funding become available. The megaprojects were ranked by Priority A, B, C or D. Priorities A and B megaprojects would be funded only if additional state or federal funding became available. Priorities C and D megaprojects are unfunded. **Table 10-8** through **Table 10-11** list the megaprojects by priority.

Due to the fact that only Priority A and B megaprojects would be funded if state and federal funding were available, only these two categories are considered viable. For the purpose of the Freight Mobility Plan Priority A and B projects were overlaid with the bottleneck locations to see which ones would assist in alleviating freight congestion on the highway system (**Figure 10-2**). Although these projects have not been conceived or planned specifically for freight movement, the megaprojects have the opportunity to greatly improve the mobility of truck freight by addressing capacity issues of those freight bottlenecks identified.

Table 10-8: Priority A Megaprojects

ID No.	Area	Facility	Limits	Improvement Type	Mode/Tier	Total Cost ($M)	DOTD ($M)	Other ($M)
1	Lafayette	I-49 South	I-10 in Lafayette to Lafayette Airport	Upgrade to freeway	Trucking/2	$750	$700	$50
4	Lafourche & St. Charles Parishes	I-49 South	Raceland to Des Allemands	Upgrade to freeway	Trucking/2	$190	$190	$0
23b	Shreveport	I-20	Red River Bridge (I-49, Shreveport to Traffic Street, Bossier City)	Widen to 6 lanes	Trucking/1	$135	$135	$0
23c	Shreveport	I-20	LA 3 to I-220 E	Widen to 6 lanes	Trucking/1	$90	$90	$0
24	Monroe	I-20	LA 546 to LA 594 (Monroe)	Widen to 6 lanes	Trucking/1	$220	$220	$0
25	Sulphur/Lake Charles	I-10	TX SL to LA 108	Widen to 6 lanes	Trucking/1	$65	$65	$0
26	Lake Charles	I-10 (Calcasieu River BR./ Approaches)	I-210W to US 90 (Lake Charles)	Replace bridge, widen highway	Trucking/1	$450	$450	$0
27	Lake Charles	I-10	UPRR Overpass (Lake Charles) to I-210	Widen 4 to 6 lanes	Trucking/1	$50	$50	$0
28	Lafayette	I-10	LA 93 to I-49	Widen 4 to 6 lanes	Trucking/1	$100	$100	$0
29	Baton Rouge	I-10	I-110 to I-12 (Baton Rouge)	Widen 6 to 8 lanes	Trucking/1	$320	$320	$0
30a	Ascension	I-10	LA 42 to LA 74	Widen 4 to 6 lanes & new interchange	Trucking/1	$100	$100	$0
31	New Orleans	I-10	Williams Blvd. (LA 49) to Veterans Blvd	Widen to 8 lanes	Trucking/1	$150	$150	$0
34	Slidell	I-12	LA 21 to Airport Rd (to I-10/ I-59)	Widen 4 to 6 lanes	Trucking/1	$170	$170	$0
44	New Orleans	LA 23	Belle Chasse Tunnel (New Orleans)	Build 4-lane bridge	Trucking/3	$180	$160	$20
64	St. Tammany	LA 3241 (TIMED)	I-12 to Bush	New 4 lane	Trucking/*	$230	$230	$0
65	St. Bernard	Florida Avenue (TIMED)	Bridge and Approaches	New Bridge and Approaches	Trucking/3	$270	$270	$0

Table 10-8 Continued

ID No.	Area	Facility	Limits	Improvement Type	Mode/Tier	Total Cost ($M)	DOTD ($M)	Other ($M)
73b	Alexandria/ Pineville	Alexandria/ Pineville Beltway	Beltway (Segments "E, F,G,H,I"/Red Route) from LA 28 East to LA 28 West	Build/Upgrade 4-lane highway (Relocate LA 28 south of urban area)	Trucking/3	$175	$155	$20
78a	MS River	MS River	MS River	Deepen River to Baton Rouge	Ports & Waterways/1	$300	$0	$300
78b	Louisiana Coastal Access Channels	Coastal Access Channels	Coastal Access Channels	Deepen coastal access channels	Ports & Waterways/2	$300	$0	$300
79	New Orleans	Port of NO	Port of New Orleans	Napoleon Avenue Container Terminal Phase II & III	Ports & Waterways/2	$550	$100	$450
	Total Costs			**Total Costs**		**$4,795**	**$3,655**	**$1,140**

Source: 2015 Louisiana Statewide Transportation Plan. Note: Project ID Numbers are not assigned or listed in any order of priority.
*Note: *Proposed new or significantly improved roadway currently not on the tiered network.*

Table 10-9: Priority B Megaprojects

ID No.	Area	Facility	Limits	Improvement Type	Mode/Tier	Total Cost ($M)	DOTD ($M)	Other ($M)
3	St. Mary	I-49 South	Wax Lake outlet to Berwick	Upgrade to freeway	Trucking/3	$250	$225	$25
5d	Jefferson Parish	I-49 South	Extend West Bank Expressway (Ames Blvd. to Westwego)	Upgrade to freeway	Trucking/3	$150	$150	$0
8b	S. Central LA	LA 1 South	Golden Meadow to Leeville (Phase 2)	Complete 2 lane elevated roadway	Trucking/3	$320	$250	$70
9a	Houma	Houma-Thibodaux NS Connection to LA 3127 – Interstate Access Highway Phase I	US 90 to LA 3127; LA 3127	Purchase ROW for 4 lanes; Build out 2 lanes of new alignment; Widen LA 3127 (LA 3213 to LA 70)	Trucking/*	$550	$350	$200
14	Monroe	New Bridge	Ouachita River in Monroe	New bridge & connections	Trucking/*	$350	$150	$200
30b	Ascension	I-10	LA 74 to LA 22	Widen 4 to 6 lanes	Trucking/1	$80	$80	$0

Table 10-9 Continued

ID No.	Area	Facility	Limits	Improvement Type	Mode/Tier	Total Cost ($M)	DOTD ($M)	Other ($M)
32	New Orleans	I-10	Elysian Fields Ave. to Bullard Ave. (New Orleans)	Widen, implement ITS	Trucking/1	$225	$225	$0
33	Hammond	I-12	Satsuma to I-55 (S. Satsuma Rd. – I-55)	Widen to 6 lanes	Trucking/1	$180	$180	$0
40	E. Central Louisiana	US 84	Archie to Ferriday (El Camino)	Widen 2 to 4 lanes	Trucking/3	$85	$75	$10
50	Shreveport/ Bossier City	LA 511 (J. Davis Bridge)	70th St.to Barksdale Blvd. (Shreveport)	Construct new 2-lane bridge	Trucking/1	$60	$50	$10
51b	New Orleans	Pontchartrain Causeway	US 190 to I-10	Raise SB Railing, Safety Bays, 10-foot shoulders	Trucking/3	100% Toll Funded	$0	$0
54	W. Baton Rouge Parish	LA 1 Connector	I-10 to LA 1	Build 4-lane	Trucking/*	$125 ($60 from tolls)	$65	$60
57	Baton Rouge	Baton Rouge North Bypass	I-10 to I-12 (Baton Rouge)	Build/upgrade to 4-lane freeway, upgrade existing or build new MS River Bridge	Trucking/*	$1,000	$500	$500
60	Shreveport	I-49 North (Inner City Connector)	I-20 at I-49S to I-220 at I-49N Shreveport	New 4-lane freeway	Trucking/*	$380	$300	$80
84	S. Central LA	Rail	Baton Rouge to New Orleans Intercity Passenger Rail	Passenger/Freight Rail	Freight Rail/1	$262	$0	$262
85	New Orleans	Rail	New Orleans Rail Gateway Project	Rail Gateway	Freight Rail/1	$700	$100	$600
99	New Orleans	Loyola Drive/I-10 interchange, Kenner	Reconstruct Loyola Interchange (Improve access to new Louis Armstrong N.O. International Airport Terminal)	Reconstruct Interchange	Trucking/1	$90	$80	$10
100	St. Tammany Parish	I-12 Interchange Upgrade Projects	I-12 @ LA 21, US 190, LA 434, and Northshore Blvd.	Reconstruct Interchanges	Trucking/1	$160	$160	$0
101	Iberville Parish	New MRB	LA 1 to LA 30	New MS River Bridge	Trucking/*	$800	$100	$700
				Total Costs		**$5,767**	**$3,040**	**$2,727**

Source: 2015 Louisiana Statewide Transportation Plan. Note: Project ID Numbers are not assigned or listed in any order of priority.
*Note: *Proposed new or significantly improved roadway currently not on the tiered network.*

Table 10-10: Priority C Megaprojects

ID No.	Area	Facility	Limits	Improvement Type	Mode/Tier	Total Cost ($M)
2	Lafayette	I-49 South	Lafayette Airport to LA 88	Upgrade to freeway	Trucking/*	$450
5a	St. Charles Parish	I-49 South	Des Allemands to I-310 (includes improvements to I-310/US 90 interchange)	Upgrade to freeway	Trucking/*	$470
5b	St. Charles and Jefferson Parishes	I-49 South	I-310 to Avondale (East of Lapalco Blvd.)	Upgrade to freeway	Trucking/*	$253
5c	Jefferson Parish	I-49 South	Avondale (East of Lapalco Blvd.) to Westwego (includes HPL/US 90 Interchange upgrade)	Upgrade to freeway	Trucking/*	$270
7	NW LA	I-69, SIU 15	I-20 Haughton, LA to US 171 near Stonewall, LA	New 4-lane freeway	Trucking/*	$950
9b	Houma	Houma-Thibodaux North South Connection to LA 3127 – Interstate Access Highway Phase 2	US 90 to LA 3127	Build out final 2 lanes to complete 4 lane corridor	Trucking/*	$325
11	New Orleans	LA 3139 (Earhart Expressway Ramp)	Hickory Ave/Orleans Parish Line (Earhart to Airline Connector Ramp)	Add ramps to Airline Highway (US 61)	Trucking/3	$125
12	New Orleans	LA 3139 (Earhart Expressway Widening)	Hickory to I-310	Build 6-lane freeway	Trucking/3	$250
16	Bastrop	US 165/US 425 Bypass (Bastrop Bypass)	US 425 to US 165	Build 2 lanes (4-lane RW)	Trucking/*	$90
20	W. Central LA	LA 117 Improvement	LA 8 to Military Training Ground (Peason Ridge)	Reconstruct 2 lanes with full shoulders	Trucking/3	$30
22	N. Central LA	Tarbutton Rd (LA 149)	I-20 to US 80	Interchange and I-20 frontage road	Trucking/3	$20
23a	Shreveport	I-20	TX SL to I-220W	Widen to 6 lanes	Trucking/1	$180
41	Abbeville/ Esther	US 167/LA 82	Abbeville to Esther	Build/upgrade 0/2 to 4/2 lanes	Trucking/3	$40

Table 10-10 Continued

ID No.	Area	Facility	Limits	Improvement Type	Mode/Tier	Total Cost ($M)
42	Baton Rouge Metro	LA 408 (Hooper)	LA 37 to LA 16	Build 2-lane	Trucking/*	$150
43	Houma Metro	LA 3040	Houma Tunnel	Build 4-lane bridge	Trucking/*	$65
45	New Orleans Metro	Chalmette Bridge/I-510	Almonaster Blvd to West Bank Expressway	Extend freeway, build new bridge	Trucking/3	$1,350
46	Central LA	East Bypass, Natchitoches, LA	LA 1 to LA 6	Build 2-lane roadway	Trucking	$65
47	Central LA	LA 28 East	Alexandria to Archie	Widen 2 to 4 lanes	Trucking	$275
48	Baton Rouge	US 61 (Airline)	Gonzales to Cedarcrest Avenue	Widen 4 to 6 lanes	Trucking	$125
49	SE LA	LA 67 (Plank Rd)	Baker to Clinton	Widen 2 to 4 lanes	Trucking	$130
51a	New Orleans	Pontchartrain Causeway	US 190 to I-10	Widen 4 to 6 lanes	Trucking	100% Toll Funded
52	St. Tammany Parish	US 190	LA 1077 to US 11	Widen 2 to 4 lanes	Trucking	$180
53	S. Central LA	Lafayette Beltway	I-10 to US 90	Build 4-lane	Trucking	$400
55	Alexandria Metro	MacArthur Drive	I-49N to I-49S	Upgrade to freeway	Trucking	$110
61	W. Central LA	LA 8	TX SL to US 171	Widen 2 to 4 lanes	Trucking	$175
62	North Shore	I-12	Hammond to Mandeville, I-55 to LA 21	Widen 4 to 6 lanes	Trucking/1	$375
66	Lafayette/ Baton Rouge	I-10	East of Lafayette to west of Baton Rouge (Louisiana Ave to LA 1)	Widen 4 to 6 lanes	Trucking/1	$950
67	Lafayette	Lafayette Loop	I-10E to I-49N to I-10W to I-49S	Build 4-lane	Trucking	$1,600
68	Lake Charles	I-210	I-10 to I-10	Corridor Upgrade	Trucking/2	$165
69	Monroe	US 165 Widening	Monroe Metro	Corridor Upgrade/ Widening	Trucking	$165
70	SW LA	US 171 DeRidder Bypass	US 171 to US 171	Corridor Upgrade	Trucking	$90
74	River Region	I-10/I-55 Interchange	Connection between I-10EB with I-55NB	Build new freeway connection	Trucking/1	$110
75	Mandeville/ Covington	LA 25	Covington to Folsom	Widen 2 to 4 lanes	Trucking	$135

Table 10-10 Continued

ID No.	Area	Facility	Limits	Improvement Type	Mode/Tier	Total Cost ($M)
77	Baton Rouge	BUMP	US 61/US 190 Connecting I-10, I-12, I-110, US 61, and US 190	Upgrade to freeway	Trucking	$1,000
81	New Orleans	Earhart Expressway	US 61 to I-10	Extend to I-10	Trucking	$225
82	New Orleans	Peters Road LA 3017	West Bank Expressway to LA 23	Widen/Build 2/0 to 3/2 lanes	Trucking	$110
87	Shreveport	LA 3132 Inner Loop	LA 523 to TBD (LA 1 or future I-69)	New Freeway	Trucking	$160
88	Ascension/ Livingston	Ascension/ Livingston Parkway Connector	NE Ascension Parish to SW Livingston Parish	New 2 lane road w/ bridge	Trucking	$50
92	Lafayette	I-49	Lafayette to Opelousas, I-10 to US 190	Widen to 6 through lanes	Trucking/1	$200
93	S. Central LA	I-10	Sunshine Bridge to Veterans Memorial Bridge, LA 22 to LA 641	Widen to 6 through lanes	Trucking/1	$120
94	Shreveport	I-20	Shreveport to Minden, I-220 E to US 371	Widen to 6 through lanes	Trucking/1	$200
95	Monroe	I-20	Ruston to Monroe	Widen to 6 through lanes	Trucking/1	$220
96	Monroe	I-20	Minden to Ruston, US 371 to US 167	Widen to 6 through lanes	Trucking/1	$380
97	Lake Charles/ Lafayette	I-10	Lake Charles to Lafayette, US 165 to LA 93	Widen to 6 through lanes	Trucking/1	$530
98	Lake Charles	Hwy 378 Loop	John Stine to West Fork Bridge	5 Lane and realignment	Trucking	$50
102	Shreveport	I-220 Ext to Barksdale Air Force Base	I-220 Extension to Barksdale AFB (New Gate)	Extend to Barksdale AFB new gate	Trucking/2	$80
104	Ascension	LA 30/LA 431	LA 30/431 Commercial-industrial loop (includes LA 30 to LA 492 section from 2008)	New 4-lane	Trucking	$440
105	Ascension	LA 73 to I-10	Industrial Access: I-10/LA 429	New Interstate Interchange on LA 429	Trucking	$35
				Total Costs		**$13,868**
Non-Highway Megaprojects						
83	New Orleans	Rail	New Orleans CBD to New Orleans Airport	Passenger Rail	Freight Rail	$500
86	North LA	Rail	Shreveport to Dallas	Passenger Rail	Freight Rail	$160
89	Northeast LA	Vidalia Port (on MS river)	South of MRB between Vidalia & Natchez	Port development & industrial facilities	Ports & Waterways	$20

Table 10-10 Continued

ID No.	Area	Facility	Limits	Improvement Type	Mode/Tier	Total Cost ($M)
90	Central LA	Avoyelles Parish Port	Site adjacent to Atchafalaya River	Port development & industrial park/staging	Ports & Waterways	$25
91	Central LA	Site adjacent to US 165/LA 1, at I-49	Alexandria Multi-Modal Development	Rail rehab and extension, road improvements	Freight Rail	$20
				Total Costs		**$725**
				GRAND TOTAL		**$14,593**

Source: 2015 Louisiana Statewide Transportation Plan. Note: Project ID Numbers are not assigned or listed in any order of priority.
*Note: *Proposed new or significantly improved roadway currently not on the tiered network.*

Table 10-11: Priority D Megaprojects

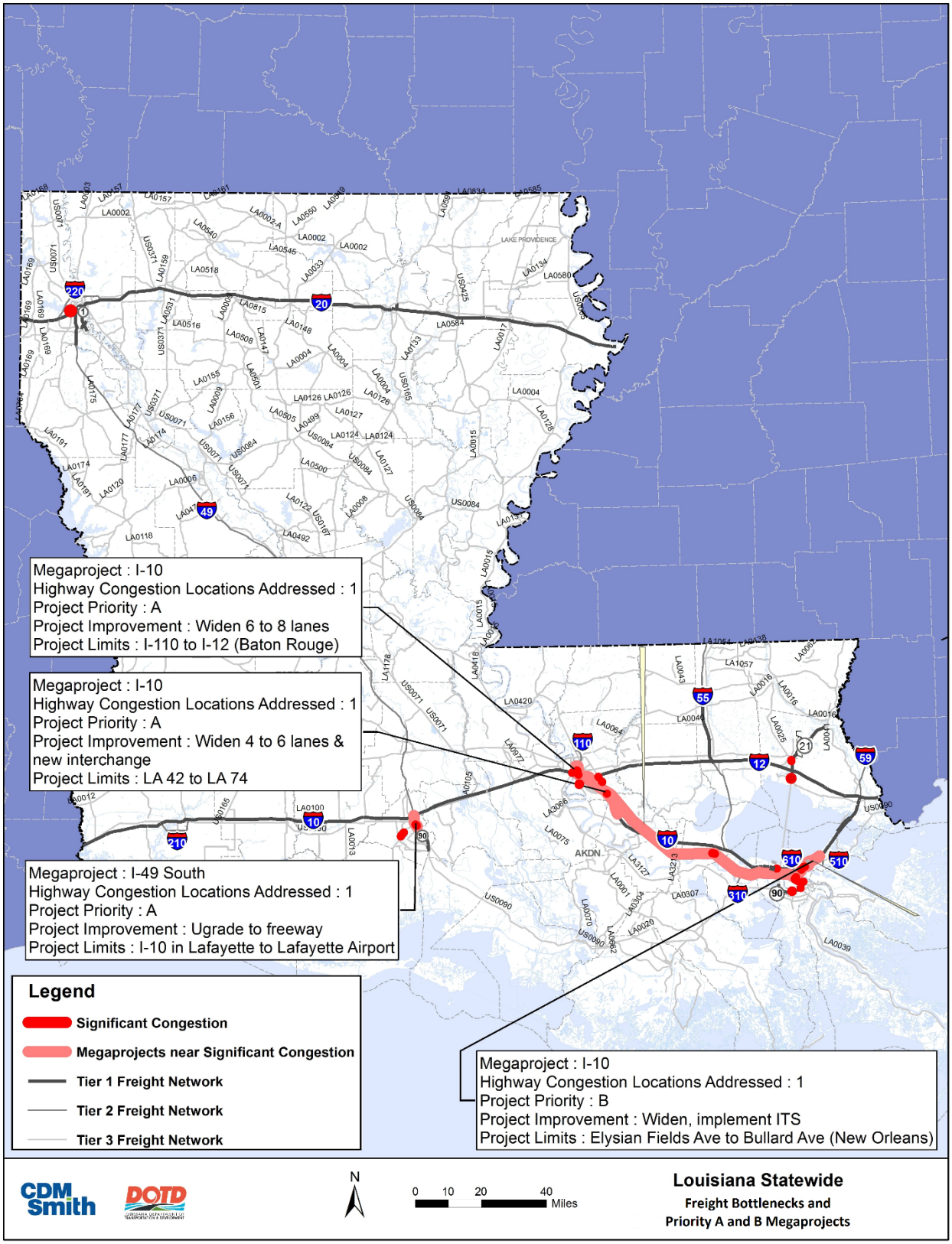
ID No.	Area	Facility	Limits	Improvement Type	Mode	Total Cost ($M)
6	NW LA	I-69, SIU 14	I-20 Haughton, LA to AR SL	Build 4-lane freeway	Trucking	$1,212
8a	S. Central LA	LA 1 South	Port Fourchon to US 90 (Phase 1)	New 2-lane elevated roadway, 4-lane	Trucking	$1,300
13	E. Central LA	Z. Taylor Parkway	I-49 to I-59	Widen 2 to 4 lanes	Trucking	$1,750
15	Monroe	Ouachita Loop	I-20 Monroe to I-20 West Monroe	Build 2 lanes	Trucking	$600
18	NE LA / Clayton	US 65	LA 15 to AR SL	Widen 2 to 4 lanes	Trucking	$870
19	SW LA	Acadiana Trail, US 190/ LA 12	TX SL to Basile (Acadiana Trail)	Widen 2 to 4 lanes	Trucking	$600
21	W. Central LA	LA 117 Widening	LA 8 to LA 6	Widen 2 to 4 lanes	Trucking	$380
35	Lake Charles-Monroe	US 165	I-10 to I-20	Upgrade to freeway	Trucking	$2,700
36	NW LA	LA 1	LA 169 to LA 538	Widen 2 to 4/5 lanes	Trucking	$30
37	NW LA	LA 1 (Tri-State)	LA 538 to AR SL	Widen 2 to 4 lanes	Trucking	$220
39	W. Central LA	LA 6 / US 84	TX SL to Archie (El Camino)	Widen 2 to 4 lanes	Trucking	$925
56	New Orleans Metro	Donner Rd.	West Bank Expressway to Peters Rd	Build 4-lane	Trucking	$110

Table 10-11 Continued

ID No.	Area	Facility	Limits	Improvement Type	Mode	Total Cost ($M)
58	Baton Rouge	Baton Rouge South Bypass	I-10 to I-12 (Baton Rouge)	New 4-lane freeway	Trucking	$2,170
59	Monroe	LA137/133, US 425	I-20 Rayville to Bastrop	Widen 2 to 4 lanes	Trucking	$260
63	South Central LA	I-10 Alternative, US 165/190	US 165, I-10 to US 190; US 190, US 165 to I-49	Upgrade to freeway	Trucking	$1,075
71	NW LA	US 371	US 71 to AR SL	Construct passing lanes	Trucking	$50
72	New Orleans	West Side Expressway	I-310 (St. Charles Parish) to I-10 (WBR Parish) (West Bank Connector)	Build new 4-lane highway	Trucking	$1,700
73a	Alexandria/ Pineville	Alexandria/Pineville Beltway	Beltway (Segment "J"/Green Route) from LA 28 West to I-49	Build new 4-lane highway	Trucking	$20
76	North Shore	LA 25	Folsom to Mississippi	4-lane (Widen to 4-lane divided)	Trucking	$250
80	New Orleans	Leake Avenue	Port of New Orleans	Extend to Port of NO	Trucking	$75
103	St. John Parish	I-10 connector	I-10 to US 61 with interchange	New 4 lane & Interchange	Trucking	$110
Total Costs						**$16,407**

Source: 2015 Louisiana Statewide Transportation Plan. Note: Project ID Numbers are not assigned or listed in any order of priority.

Figure 10-2: Highway Congestion and Priority A and B Megaprojects



Source: National Performance Management Research Dataset

10.4 Investment Options

Federal transportation legislation signed into law in December of 2015 establishes two new dedicated freight programs. The Fixing America's Surface Transportation (FAST) Act places major emphasis on freight investments to be supported by the Highway Trust Fund creating a new National Highway Freight Program (NHFP) funded at an average of $1.2 billion per year and distributed to the states by formula. In addition, a new discretionary program entitled the Nationally Significant Freight and Highway Projects is established, funded at an average of $900 million per year. This federal legislation provides states with incentives to partner with the private sector to identify and fund freight projects that benefit both the public and private sector.

There are many different investment options that can be employed by DOTD. The Department can look at specific projects, analyze and prioritize them, and then determine when to program them and what funding may be available to complete them. Funding a program is another option. With this option, the Department may elect to invest in specific types of freight needs as a category with a dedicated staff, funding to be administered according to particular guidelines or rules and specific, quantified objectives. For example, an option may be to focus investment in rail infrastructure with the goal of improving the efficiency of the freight system and transportation cost competitiveness.

The project needs described above are a starting point for determining investment options. Another step is to determine the available funding. The 2015 Louisiana STP defined four revenue scenarios for the years 2022 and 2042. Scenario 1 is the baseline and models business as usual: no new revenues, no adjustments in funding, up or down, over the life of the STP. Scenario 2 models a dramatic reduction in federal funds based on a forecast of federal-aid revenues that relies only on federal Highway Trust Fund revenue streams with no General Fund appropriation. Scenario 3 forecasts a moderate increase in the State Transportation Trust Fund (TTF) due to the infusion of a $400 million annual increase in state revenues. Scenario 3 also assumes that new state revenues will increase by 2.5 percent annually from fiscal years 2023 to 2044. Scenario 4 models an aggressive increase that includes the State TTF increase from additional state revenues (shown in Scenario 3) and a $300 million annual increase in federal highway revenues (and proportional increase in federal transit revenues) beginning in 2020.

10.4.1 Freight Project Revenue

The 2015 Louisiana STP includes forecasted budget allocations for DOTD's program line items by revenue scenario for fiscal years 2022 and 2042 compared to a baseline budget from 2012 (**Table 10-12**). Working with DOTD's executive staff, the advisory councils provided input on the budgeted line items which received approval from the Policy Committee. The budget allocation was developed for planning purposes and will serve as a guide for DOTD programming, depending on how the Department's budget grows relative to the funding scenarios. The funding projections outlined in the STP are also summarized below because the Freight Mobility Plan projects hinge from those of the STP. The scenarios shown in **Table 10-12** (and descriptions shown in **Table 10-13**) include the entire state program and not just the freight component. Freight needs and revenues are shown in **Table 10-14**.

The Plan team did not recommend that a single budget scenario be selected as a preferred scenario. The scenarios represent alternative funding outcomes based on prospective state and federal legislative actions and external events over which the DOTD has little or no control. However, the Plan team

described Revenue Scenario 3 as the most likely scenario, because it assumes a modest extrapolation of current processes and decisions, the most notable of which is a transfer of all vehicle sales tax (VST) funds in excess of a $9.7025 billion General Fund threshold to the transportation trust fund. The Plan team estimated that State General Fund revenues will exceed the threshold by the year 2020 and VST revenues will begin flowing to transportation.

Table 10-12: Forecast Funding Scenarios & Budget Line Items ($millions Year of Expenditure Dollars)*

Budget Line Item	2012 Budget	FY 2022 Scenarios				FY 2042 Scenarios			
		1	2	3	4	1	2	3	4
Highway Preservation									
Non-Interstate Pavement (NHS)	27.7	55.0	55.0	55.0	55.0	80.0	75.0	80.0	80.0
Non-Interstate Pavement (SHS)	98.4	100.0	80.0	110.0	110.0	110.0	83.0	165.0	165.0
Non-Interstate Pavement (RHS)	43.2	50.0	45.0	60.0	60.0	50.0	45.0	90.0	90.0
Interstate Pavement	80.0	85.0	65.0	85.0	85.0	90.0	70.0	125.0	125.0
Bridge Preservation (on)	165.5	169.4	144.4	255.0	415.0	168.8	153.8	280.0	510.0
Bridge Preservation (off)	20.4	12.0	12.0	48.0	48.0	12.0	12.0	48.0	72.0
SUBTOTAL	**435.2**	**471.4**	**401.4**	**613.0**	**773.0**	**510.8**	**438.8**	**788.0**	**1,042.0**
Highway Operations									
ITS	13.0	15.0	15.0	15.0	15.0	15.0	15.0	18.0	18.0
Traffic Control Devices	16.0	19.0	19.0	25.0	25.0	19.0	19.0	29.0	29.0
Interstate Lighting	3.0	3.5	3.5	6.0	6.0	3.5	3.5	10.0	10.0
TSM	8.0	8.0	8.0	9.0	9.0	10.0	10.0	10.0	10.0
Roadway Flooding	4.0	4.5	4.5	4.5	6.0	5.0	5.0	7.0	7.5
Weigh Stations	2.1	3.0	3.0	3.0	3.0	3.0	3.0	3.5	3.5
Rest Areas	12.0	4.0	4.0	4.0	4.0	4.0	4.0	5.0	5.0
Ferries	0.7	1.5	1.5	1.5	1.5	2.0	2.0	2.0	2.0
Moveable Bridges	2.1	2.5	2.5	10.0	10.0	3.6	3.6	11.0	11.0
Major Repairs/ Generators/Pump Stations	2.8	4.0	4.0	4.5	5.0	5.0	5.0	6.0	7.0
SUBTOTAL	**63.7**	**65.0**	**65.0**	**82.5**	**84.5**	**70.1**	**70.1**	**101.5**	**103.0**
Hwy Safety									
Roadway Safety	50.9	50.0	36.0	60.0	70.0	60.0	40.0	70.0	80.0
Rail/Highway Crossings Devices	9.0	10.0	10.0	10.0	12.0	10.0	10.0	12.0	12.0
Rail/Grade Separations	1.0	10.0	10.0	10.0	12.0	10.0	10.0	12.0	15.0
SUBTOTAL	**60.9**	**70.0**	**56.0**	**80.0**	**94.0**	**80.0**	**60.0**	**94.0**	**107.0**
Megaprojects	0.0	0.0	0.0	105.5	217.2	0.0	0.0	170.5	405.2
SUBTOTAL	**0.0**	**0.0**	**0.0**	**105.5**	**217.2**	**0.0**	**0.0**	**170.5**	**405.2**
Regular Capacity	51.4	0.0	0.0	35.0	50.0	0.0	0.0	55.0	55.0
SUBTOTAL	**51.4**	**0.0**	**0.0**	**35.0**	**50.0**	**0.0**	**0.0**	**55.0**	**55.0**
Non-Highway									
Rural Transit	0.0	0.0	0.0	10.0	10.0	0.0	0.0	10.0	13.0
Urban Transit	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	7.0
CMAQ	8.6	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5
Freight Rail	0.0	0.0	0.0	3.0	3.0	0.0	0.0	5.0	5.0

Table 10-12 Continued

Budget Line Item	2012 Budget	FY 2022 Scenarios				FY 2042 Scenarios			
		1	2	3	4	1	2	3	4
Ports Program	19.7	20.0	20.0	51.1	51.1	20.0	20.0	70.9	70.9
Aviation Program	28.5	28.5	28.5	28.9	28.9	31.9	31.9	31.9	31.9
	61.8	**59.0**	**59.0**	**103.5**	**103.5**	**62.4**	**62.4**	**128.3**	**133.3**
Other Transportation									
Intermodal Connectors	10.0	10.0	10.0	10.0	12.0	10.0	10.0	12.0	15.0
Additional for DOTD Equip.	0.0	0.0	0.0	10.0	10.0	0.0	0.0	12.0	12.0
Additional for District Supplies	0.0	0.0	0.0	27.0	27.0	0.0	0.0	30.0	30.0
Additional for District Contract Maintenance	0.0	0.0	0.0	10.0	10.0	0.0	0.0	12.0	12.0
Access Management	4.0	10.0	10.0	15.0	15.0	10.0	10.0	18.0	18.0
Road Transfer Fund	9.8	25.0	25.0	25.0	25.0	25.0	25.0	30.0	30.0
Travel Demand Management	1.0	1.4	1.4	1.4	1.4	2.0	2.0	2.0	2.0
Urban Systems Match	0.0	7.0	6.0	7.0	7.0	7.0	6.0	7.0	7.0
Increased Local Assistance (local road rehab program)	0.0	0.0	0.0	30.0	30.0	0.0	0.0	30.0	30.0
Misc.	13.7	5.6	5.6	5.6	5.6	6.2	6.2	6.2	6.2
	38.5	**59.0**	**58.0**	**141.0**	**143.0**	**60.2**	**59.2**	**159.2**	**162.2**
Local Programs**									
Urban Systems	60.7	61.3	61.3	61.3	61.3	65.0	65.0	65.0	65.0
Local Road Safety	3.0	3.0	3.0	3.0	3.0	3.0	3.0	7.0	7.0
Transp. Alternatives Program	11.2	11.7	11.7	11.7	11.7	13.0	13.0	13.0	13.0
Parish Transportation Fund	46.4	46.4	46.4	55.0	55.0	46.4	46.4	55.0	61.0
	121.3	**122.4**	**122.4**	**131.0**	**131.0**	**127.4**	**127.4**	**140.0**	**146.0**
Capital Outlay Dedication for Navigation	0.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0
	832.8	**846.8**	**761.8**	**1,324.9**	**1,629.6**	**910.9**	**817.9**	**1,691.3**	**2,208.5**

**The forecast revenue scenarios and budgeted line items in this table include the entire state program and not just the freight component. They are in nominal dollars and are for planning purposes only.*
***Local program funding is federal funding that is administered by DOTD to local or regional agencies.*

Table 10-13: Forecast Revenue Scenarios Line Item Descriptions

Budget Line Item		Description
Highway Preservation	Non-Interstate Pavement	Overlays, Rehabilitation
	Interstate Pavement	Overlays, Rehabilitation
	Bridge Preservation (on/off)	Rehabilitation, Reconstruction
Highway Operations	ITS	Dynamic Message Signs, Motor Assistance Patrols, CCTV, Maintenance
	Traffic Control Devices	Signs, Signals, Striping
	Interstate Lighting	Construction of High Mast Towers and Lighting Systems *(Not included in Freight Movement Needs)*
	TSM	Turn Lanes, Other Minor Traffic Flow and Safety Items

Table 10-13 Continued

Budget Line Item		Description
Highway Operations	Roadway Flooding	Drainage Improvements, Culvert Addition/Replacement to Prevent Roadway Flooding *(Not included in Freight Movement Needs)*
	Rest Areas	Construction, Maintenance, Rehabilitation
	Ferries	Dry Docking, Major Repairs *(Not included in Freight Movement Needs)*
	Moveable Bridges	Repair Projects to Electrical & Mechanical Components
	Major repairs/Generators /Pump Stations	Rehabilitation, Replacement, Repair
Highway Safety	Roadway Safety	Roundabouts, Cable Barrier, Striping, Curve Realignment
	Rail/Highway Crossings Devices	Flashing Signals, Signs, Gates
	Rail/Grade Separations	New Overpasses over Railroad
Megaprojects		Large Projects Requiring Additional Funding *(Freight only)*
Regular Capacity		New Roads/Additional Traffic Lanes
Non-Highway	Rural Transit	Operating and Capital Assistance to Rural Transit Agencies *(Not included in Freight Movement Needs)*
	Urban Transit	Capital Assistance to Urban Transit Agencies *(Not included in Freight Movement Needs)*
	CMAQ	Air Quality Improvement Projects
	Freight Rail	Assisting Short Line Railroads
	Ports Priority Program	Port Projects
	Aviation Program	Participation in Capital Projects, Maintenance Program
Other Transportation	Intermodal Connectors	Highway Connectors to Rail Yards, Airports, Ports and Transit Terminals *(Freight only)*
	DOTD Equipment	Heavy Equipment, Fleet Replacement *(Not included in Freight Movement Needs)*
	District Supplies/Contract Maintenance	Hot Mix, Herbicide, Mowing, Guardrail Repairs, Cable Barrier Repairs, Signal Agreements *(Not included in Freight Movement Needs)*
	Access Management	Projects to Manage Public Street and Driveway Access to State Highways
	Road Transfer Fund	Funding to Local Agencies to Take Over State Roads *(Not included in Freight Movement Needs)*
	Travel Demand Management	Support for ride matching, van pooling *(Not included in Freight Movement Needs)*
	Urban Systems Match	Federal Match for Urban System projects on state highways
	Increased Local Assistance	State-administered program to rehabilitate/reconstruct parish and municipal roads & streets Local Programs (federal funds)
	Misc.	Budget reserved to address unforeseen needs.
Local Programs (Federal Funds)	Urban Systems	New Construction, Rehabilitation, Projects
	Local Road Safety	Striping, Roundabouts, Safety Training
	Transportation Alternatives Program	Enhancement Projects, Bike Paths *(Not included in Freight Movement Needs)*
	Parish Transportation Fund	Parish Operations and Maintenance

Note: The forecast revenue scenario line items in this table include the entire state program and not just the freight component

10.4.2 Freight Projects Needs and Revenue Summary

Currently, there are estimated to be a total of over $51.7 billion in projects (**Table 10-14**) that can assist in the movement of goods. This does not account for the elimination of freight highway bottlenecks. Removing those revenue line items that do not have relevancy to freight movement results in even the most optimistic revenue projections yielding an estimated total of $12.9 billion in funding between 2012 and 2022, and an estimated $49.5 billion between 2012 and 2042. This results in a current need vs. 2042 revenue shortfall in freight project funding of approximately $2.2 billion.

Table 10-14: Twenty-Five Year Capital Needs Summary

Mode	Needs ($millions)
Highway	$32,591.1
Rail	$1,144.4
Ports/Waterways	$7,485.6
Aviation	$10.6
Mega Projects Highway (A&B only)	$8,325.0
Non-Highway Mega Projects	$2,112.0
Total	**$51,668.7**

With a significant gap between needs and expected revenues, critical decisions must be made which involve considering project benefits, funding availability, political support and national, statewide, and regional priorities. These considerations must also be dynamic and shift as the economy and the priorities of future decision-makers and administrations shift.

10.5 Strategy

Louisiana's freight network continues to be the foundation of the State's economic success. Freight supports jobs in freight dependent businesses such as oil and gas, manufacturing, retail trade, agriculture, and fishing. For the most part, this transportation infrastructure was constructed many years ago. The cost to maintain the system continues to increase and the demands on the system continue to grow and must be the state's first priority. To compete in the 21st Century global economy, Louisiana must find a way to make the strategic investments in its freight network that are necessary to support economic growth.

Smart programs, policies, and projects can help the DOTD continue to maintain and enhance the multimodal freight system upon which the State's economy depends. The strategies and recommendations presented in this Plan include major investments in freight transportation infrastructure, as well as low cost programs and policies designed to enhance freight operations and freight-supported economic development in the State. The following subsections summarize the overall policy, program, and project recommendations previously listed in **Table 10-3** through **Table 10-6**.

10.5.1 Policy Recommendations

A critical step in building an implementable plan is to understand the overall framework and interactions among the stakeholders who carry out the various aspects of Louisiana's freight decision making—both public and private. Understanding this decision-making framework provides opportunities for cooperation and collaboration to maintain, enhance and expand the mobility of freight throughout the

state. By working together, various stakeholders with different perspectives can identify common needs and garner broad support for them.

Ensure freight representation and participation by private sector in the state and MPO planning process.

Through the development of this Louisiana Freight Mobility Plan, a Freight Advisory Committee was established to help guide its development and recommendations. This largely private sector group provided valuable input and is expected to be engaged as the Plan begins to be implemented. Engaging the private sector in public sector planning efforts requires value on both sides. The public sector seeks valuable insight into the operational aspects and system needs of the private sector. The private sector expects that their input will be used to make decisions and to assist their business's operations. MPOs are also able to establish formal or informal private sector groups to assist in informing practical and implementable plans.

Support collaboration between DOTD and LED on identifying transportation needs, issues and impacts and recruiting industry/business into the state.

The responsibility of the DOTD is to provide a safe, efficient and reliable transportation system, while LED is responsible for maintaining and attracting new businesses to the state. There is a strong incentive for collaboration between these two groups because each can improve the efforts of the other. The agencies can collaborate on initiatives such as achieving economic development through investments in the aviation, rail and marine systems or studying the economic competitiveness of Louisiana through its freight transportation system.

Leverage public-private partnerships for funding non-highway improvements.

Improvements to non-highway projects are often funded by the private sector. Typically, for example, the private sector funds on-dock port capacity and rail improvements. Partnering with the private sector can yield great benefits by leveraging public and private interests and capital to expedite a project that contributes to economic growth, which is of interest to both parties.

Support multi-state coordination of freight infrastructure improvements.

Freight movement transcends jurisdictional boundaries, and it is a global supply chain system that produces and delivers goods to their destination. Since only 26 percent of all the freight tonnage originates and is destined for locations within the state, Louisiana has a keen interest in coordinating freight infrastructure improvement with its neighbors. The FAST Act requires that plans consider multijurisdictional issues related to freight movement. Interstates, Class I railroads, and the Mississippi River corridor and tributaries accommodate the vast majority of Louisiana freight across boundaries. For example, addressing capacity issues in Louisiana along the Mississippi River benefits the users in states upstream. Coordination across states in planning and selecting improvements can leverage political support into funding support.

Update freight modal systems plans on a regular basis.

Modal plans provide excellent information and insight into the operations, condition and performance of the freight system. This Plan is a culmination of many of the modal plans recently produced by the DOTD. Keeping that information current can be a challenging task, but failing to update the plans can require that decisions be made with old and sometimes irrelevant information. In order to provide

decision makers with the information they need for sound decision-making, these plans should incorporate updated data regularly and be reexamined in their entirety at least every 5 years. This will ensure their relevance and provide the critical freight system information for better planning and decision making.

10.5.2 Program Recommendations

Louisiana Freight Mobility Plan has produced a set of program recommendations that are intended to elevate the visibility and consideration of freight in programming and planning. Each recommendation can be implemented as a stand-alone initiative. However, there are synergies among these initiatives and when implemented in a collective manner their effectiveness can be magnified.

This Plan recognizes the constraints of current funding. For the foreseeable future, Louisiana will need to focus on system preservation and where achievable and most beneficial, target and pursue expansion. The DOTD will have to make investment decisions in four-year increments as they are doing now in the STIP process but, with an eye on future options and opportunities.

Maintain and improve the designated Louisiana Freight Network to ensure the freight system continues to move toward achieving the transportation goals identified in the 2015 Louisiana Statewide Transportation Plan and the Louisiana Freight Mobility Plan.

Louisiana must further evaluate alternative funding and financing sources to ensure that the freight system is preserved and maintained, and that the most critical high priority improvements are implemented. As such, the DOTD should focus on improving its roads and bridges to a state of good repair within the first five years of the plan's acceptance by FHWA. The specific projects are discussed in the next section. Preservation investments have been shown to be beneficial to the movement of freight by improving safety, increasing efficiency, and reducing detours.

Use DOTD's freight project prioritization framework to help decision-makers prioritize future freight investments.

The DOTD freight prioritization process, developed as a part of this Freight Mobility Plan, provides a framework for evaluating and prioritizing key multimodal freight projects. This is the first-generation freight prioritization process for DOTD and future refinements and additional quantitative data inputs may be incorporated over time to improve the process and enhance project evaluation.

Refine performance measures.

DOTD should continue to refine its performance measures developed as part of this Freight Mobility Plan when a new, sustainable data stream becomes available. Through the strategic planning process, the DOTD should consider incorporating future data into the prioritization process.

Develop a process to identify, monitor, and restore condition of special truck routes that support the extractive and agricultural industries.

The extractive (energy, mining) and agricultural industries depend on the state and non-state roadway system to transport equipment and raw materials to energy extraction regions. Developing a process to monitor, maintain and improve this system will ensure that the economy continues to thrive and investments are made wisely.

10.5.3 Project Recommendations

The prioritization process (see **Chapter 4**) developed in this Plan considers a project's freight relevance and impact. The projects that did not progress to the final prioritization process were captured for future consideration and are discussed here. The priority and non-priority projects are discussed below.

Priority Projects

The initial freight project prioritization process generated the prioritized projects list. The initial prioritized list includes the HPP and megaprojects that are relevant to the freight network that has been established using the Tiered Freight Network criteria developed through MAP-21 and the freight plan development process as explained in **Chapter 5**. These projects are shown by mode in **Appendices B, C, D, and E**. This list includes 408 highway, 43 rail freight, 40 ports and waterways, and 5 air cargo projects. Many of these projects are on the HPP or in other modal programs and have funding. As noted, those projects such as the megaprojects do not have dedicated funding. All projects in the current Statewide Transportation Improvement Program (STIP) and future STIPs that are located on Louisiana's Freight Network are included in the prioritized projects list without need for amendment or update of this document.

Non-Prioritized Planning Projects

The freight plan recommends planning studies be conducted for the 20 freight highway bottlenecks to determine what improvements will be required to enhance the movement of freight. In addition, it is recommended that planning studies be conducted for those rail/highway grade crossings with severe safety issues for potential safety improvements. These planning efforts would provide in-depth studies to better define transportation needs and improvements. Examples of planning projects are environmental studies, operational analysis, safety, and corridor studies.

11. FINANCIALLY CONSTRAINED FREIGHT INVESTMENT PLAN

Louisiana anticipates receiving approximately $3.72 billion in Federal funding program apportionments under the FAST Act for Fiscal Years 2016 to 2020 (**Table 11-1**). Funding apportionment for the National Highway Freight Program (NHFP) to Louisiana will be a total of $112.2 million for the five-year period (**Table 11-2**). In compliance with the FAST Act, the Louisiana Freight Mobility Plan lists the eligible and freight-beneficial projects that are supported by NHFP funds. The Financially Constrained Freight Investment Plan also describes all sources of funding for each NHFP project as well as its location.

Table 11-1: Louisiana Apportionments Under the Fast Act, FY2016—FY2020

Federal Funding Program	Apportioned Total
National Highway Performance Program	$2,190,747,622
Surface Transportation Program	$1,092,412,343
Highway Safety Improvement Program	$218,848,636
Railway-Highway Crossings Program	$21,326,525
Congestion Mitigation Air Quality Program	$59,367,620
Metropolitan Planning	$22,326,957
National Freight Program	$112,213,621
TOTAL	**$3,717,243,324**

Table 11-2: Louisiana Apportionments Under the National Freight Program, FY2016—FY2020

Fiscal Year	Apportioned Total
FY 2016	$ 20,483,439
FY 2017	$ 19,592,854
FY 2018	$ 21,374,023
FY 2019	$ 24,045,776
FY 2020	$ 26,717,529
TOTAL	**$ 112,213,621**

Table 11-3 provides the Louisiana Financially Constrained Freight Investment Plan for the FAST Act horizon period of FY 2016 to FY 2020. **Table 11-4** lists the Freight Investment Plan for FY 2021 to FY 2023 assuming the NFP program apportionments continue beyond FY 2020.

Table 11-3: Louisiana Financially Constrained Freight Investment Plan, FY 2015 to FY 2020

Route	Parish	Project Description	Estimated Construction Cost	FFY NHFP funds programmed	Funds Programmed	Total
I-10	Lafayette and St. Martin	H.003003 I-10: E. JCT. I-49 TO LA 328: Widening and Rehabilitation	$157,270,346.30 [2]	FFY 2015-2016 FFY 2017-2018 [1]	NHFP at 80/20	$20,073,770.00
					NHPP at 80/20 (AC-ed) [1]	$53,888,111.06
					NHS/NHPP at 80/20	$664,028.78
					FASTLANE funds	$50,000,000.00
					IM DISCR at 80/20	$768,934.00
					Repurposed DEMO at 80/20	$422,033.20
					TTF (state funds as match)	$31,453,469.26
					Total	**$157,270,346.30**
I-10	Ascension and East Baton Rouge	H.009250 I-10: HIGHLAND TO LA 73: WIDEN INTERSTATE TO 3 LANES EACH DIRECTION	$93,643,518.35 [2]	FFY 2016-2017	NHFP at 100%	$18,373,734.00
					NHPP at 100%	$52,566,068.76
					NHPP at 100% (AC-ed)	$7,612,152.75
					Repurposed DEMO at 80/20	$15,091,562.84
					Total	**$93,643,518.35**
I-10	St. Martin	H.010601 I-10: LA 328 TO LA 347: INTERSTATE WIDENING AND REHABILITATION	$120,954,303.56 [3]	FFY 2018-2019	NHFP at 80/20	$20,073,770.00
					NHPP at 80/20	$34,994,684.87
					NHPP at 90/10	$46,906,861.48
					TTF (state funds as match)	$18,978,987.21
					Total	**$120,954,303.56**
I-10	Calcasieu	H.003184 I-10: TEXAS STATE LINE-E. OF COONE GULLY: WIDEN TO 6 LANES	$77,200,045 [3]	FFY 2019-2020 FFY 2020-2021 [4]	NHFP at 80/20	$20,073,770.00
					NHFP at 80/20 [4]	$20,073,770.00
					NHPP at 80/20	$21,612,496.00
					TTF (state funds as match)	$15,440,009.00
					Total	**$77,200,045.00**

[1] Amount of NHFP apportioned for FFY 2017-2018 will be converted from this balance. [2] Estimated construction cost is amount actually authorized. [3] Estimated construction cost includes 3% for contingencies and 15.31% for IDC and incidentals. IDC rate is based on FFY 2016-2017 IDC rate and may change. [4] Will AC at least this amount in federal funds when construction is initially authorized in order to convert to NHFP funds when get FFY 2020-2021 apportionment. Per NHFP, FAST Act Section 1116 Implementation Guidance: Authorization Levels Under the FAST Act: Section 1101 of the FAST Act authorizes appropriations for the Federal-aid Highway Program, including the NHFP. FAST Act, section 1104(b)(6), amends 23 U.S.C. 104(b) and provides for the apportionment of funds for the NHFP in the following amounts for FY 2016, FY 2017, FY 2018, FY 2019, and FY 2020: $1.15B, $1.1B, $1.2B, $1.35B, and $1.5B, respectively. After setasides, penalties, and sequestration, in FFY 2015-2016 we got $20,073,770. Since apportionments for FY 2017-

2018, FY 2018-2019, and FY 2019-2020 are supposed to be more than the apportionment for FFY 2015-2016, assumed will get at least $20,073,770 in federal share for FFY 2017-2018 and beyond. If we get more, then less NHPP will be obligated on each project.

Table 11-4: Louisiana Financially Constrained Freight Investment Plan, FY 2021 to FY 2023

Route	Parish	Project Description	Estimated Construction Cost	FFY NHFP funds programmed	Funds Programmed	Total
I-10	Acadia and Lafayette	H.012174 I-10: JEFF PL - I-49 (OGFC/SLAB REPAIR)	$23,753,860 [3]	FFY 2021-2022	NHFP at 90/10	$20,073,770.00
					NHPP at 90/10	$1,304,704.00
					TTF (state funds as match)	$2,375,386.00
					Total	**$23,753,860.00**
I-10	Orleans	H.012591 I-10: PARIS RD - LAKE PONTCHARTRAIN	$23,753,860 [3]	FFY 2022-2023	NHFP at 90/10	$20,073,770.00
					NHPP at 90/10	$1,304,704.00
					TTF (state funds as match)	$2,375,386.00
					Total	**$23,753,860.00**

[3] Estimated construction cost includes 3% for contingencies and 15.31% for IDC and incidentals. IDC rate is based on FFY 2016-2017 IDC rate and may change. [4] Will AC at least this amount in federal funds when construction is initially authorized in order to convert to NHFP funds when get FFY 2020-2021 apportionment. Per NHFP, FAST Act Section 1116 Implementation Guidance: Authorization Levels Under the FAST Act: Section 1101 of the FAST Act authorizes appropriations for the Federal-aid Highway Program, including the NHFP. FAST Act, section 1104(b)(6), amends 23 U.S.C. 104(b) and provides for the apportionment of funds for the NHFP in the following amounts for FY 2016, FY 2017, FY 2018, FY 2019, and FY 2020: $1.15B, $1.1B, $1.2B, $1.35B, and $1.5B, respectively. After setasides, penalties, and sequestration, in FFY 2015-2016 we got $20,073,770. Since apportionments for FY 2017-2018, FY 2018-2019, and FY 2019-2020 are supposed to be more than the apportionment for FFY 2015-2016, assumed will get at least $20,073,770 in federal share for FFY 2017-2018 and beyond. If we get more, then less NHPP will be obligated on each project.

Using the freight prioritization framework described in Chapter 4, DOTD selected the freight-beneficial projects listed in **Table 11-3** and **Table 11-4** for partial funding through the NHFP program. The prioritization factors for each project are described in **Table 11-5**.

Table 11-5: Louisiana Freight Projects Prioritization Factors

Route	Parish	Project Description	Louisiana Freight Goals, Prioritization Factors				
			Economic Competitiveness & Efficiency	Safety & Security	Infrastructure Preservation & Maintenance	Environmental Stewardship	Performance and Accountability
I-10	Lafayette and St. Martin	H.003003 I-10: E. JCT. I-49 TO LA 328: Widening and Rehabilitation	Is on the defined tiered network	Improves freight incident response times	Improves or maintains existing pavement to a state of good repair	Reduces air emissions	Addresses freight congestion
			Improves access to freight generators				Improves system capacity
			Supports retention or expansion of business				
I-10	Ascension and East Baton Rouge	H.009250 I-10: HIGHLAND TO LA 73: WIDEN INTERSTATE TO 3 LANES EACH DIRECTION	Is on the defined tiered network	Improves freight incident response times	Improves or maintains existing pavement to a state of good repair:		Addresses freight congestion
			Improves access to/from existing or developing freight hubs				Improves system capacity
			Improves access to freight generators				
I-10	St. Martin	H.010601 I-10: LA 328 TO LA 347: INTERSTATE WIDENING AND REHABILITATION	Is on the defined tiered network	Improves freight incident response times	Improves or maintains existing pavement to a state of good repair:	Reduces air emissions	Addresses freight congestion
			Improves access to/from existing or			Reduces energy consumption	Improves system capacity and/or freight operations

Route	Parish	Project Description	Louisiana Freight Goals, Prioritization Factors				
			Economic Competitiveness & Efficiency	Safety & Security	Infrastructure Preservation & Maintenance	Environmental Stewardship	Performance and Accountability
			developing freight hubs				
			Provides access to energy areas				
			Improves access to freight generators				
			Supports retention or expansion of business				
I-10	Calcasieu	H.003184 I-10: TEXAS STATE LINE-E. OF COONE GULLY: WIDEN TO 6 LANES	Is on the defined tiered network	Improves freight incident response times	Improves or maintains existing pavement to a state of good repair:	Reduces air emissions	Addresses freight congestion
			Improves access to/from existing or developing freight hubs		Improves structurally deficient bridges	Reduces energy consumption	Improves system capacity and/or freight operations
			Provides access to energy areas				
			Improves access to freight generators				
			Supports retention or expansion of business				
I-10	Acadia and Lafayette	H.012174 I-10: JEFF PL - I-49 (OGFC/SLAB REPAIR)	Is on the defined tiered network	Improves wet weather safety	Improves or maintains existing pavement in a state of good repair	Improves quality of stormwater runoff	Improves system capacity and/or freight operations
			Improves access to/from existing or				

Route	Parish	Project Description	Louisiana Freight Goals, Prioritization Factors				
			Economic Competitiveness & Efficiency	Safety & Security	Infrastructure Preservation & Maintenance	Environmental Stewardship	Performance and Accountability
			developing freight hubs				
			Improves access to freight generators				
			Supports retention or expansion of business				
I-10	Orleans	H.012591 I-10: PARIS RD - LAKE PONTCHARTRAIN	Is on the defined tiered network		Improves or maintains existing pavement in a state of good repair		Addresses freight congestion
			Improves access to/from existing or developing freight hubs				
			Improves access to freight generators				
			Supports retention or expansion of business				

12. IMPLEMENTATION PLAN

The Louisiana freight system is the backbone of the State's economy, supporting the movement of goods and commodities, facilitating the retention and creation of jobs, setting the conditions for private investment, and enhancing the quality of life for Louisiana residents. By 2040, the freight tonnage that Louisiana will generate is expected to increase by 62 percent, from 2012. There is a need for capacity and maintenance improvements to relieve congestion and maintain the reliability of the network. Maintenance of the state's freight infrastructure is critical to the State's economy. Identifying and funding high priority improvements to the freight network will ensure that business, which competes in an increasingly global marketplace, can thrive and prosper.

The implementation of this Plan will guide the DOTD toward achieving its freight mobility goals for the future. This Plan lays out a new framework for incorporating freight into the decision-making process which requires a course of action that does not now exist. Looking at policy, program, and project recommendations with a freight perspective is critical to advancing this Plan and will require cooperation and coordination among various entities, both public and private. This implementation plan lays out the framework for that coordination, and the steps needed to help achieve the Plan's intent.

12.1 Decision Making Framework

Most of the non-highway freight system is owned by the private sector, and, typically, investments decisions are driven by business considerations. Roadway investments uniquely and specifically designed to improve freight movements are rare. Historically, roadway project selections have favored investments that improve passenger traffic with secondary, consideration for freight movement.

The establishment of a freight decision making framework as described in **Chapter 4** provides an opportunity to coordinate and integrate freight discussions and investments with a comprehensive set of perspectives and industry knowledge. The Plan recommends the policies, programs, and projects that benefit freight in a more integrated manner than has been done in the past. Institutionalizing freight decision making within the DOTD will ensure this integration continues. The Freight Plan recommends that DOTD Office of Planning lead this effort and that it involve modal organizations, regional planners, and the private sector. The Office should begin to implement the freight project prioritization framework to meet the freight goals established. Once established, the DOTD can track the progress and success of the decisions through the identified performance measures.

12.1.1 Prioritized Freight Projects

The freight project prioritization process established in the Plan has involved stakeholders from both the public and private sectors. The project recommendations encompass all freight modes and each of the DOTD Districts. The prioritization process recognizes critical linkages between economic development and freight throughout the state.

The next step in this process is to identify which projects will be moved forward and to identify the next steps in the project development process. In many cases, the next step is to initiate planning and environmental studies that may be needed before the projects can be included in the Highway Priority Program. The very high priority projects should be evaluated in terms of funding availability as these projects move to the planning phase and to the programming phase. As part of this process, the Freight Advisory Committee and stakeholders should provide input on which freight projects to move forward.

12.1.2 Current and Future Funding

Funding is critical to implementation. The estimated cost of the freight needs as listed in **Table 10-14** is nearly $51.7 billion. These projects include improvements to rail terminals, capacity improvements to Interstates, port and waterway maintenance and expansion, and air cargo connections. Every project identified is important to freight movement and economic development. Securing the funding to maintain the freight network, address safety concerns, improve connectivity and mobility, and support economic growth and competitiveness requires financial resources well beyond those currently available. Additional federal resources, increased State investment, and other financing strategies will be needed to close the gap between infrastructure needs and the supply of funds.

The shortage of funds is a critical challenge. The DOTD should review the list of priority projects with its partner organizations, agencies, and freight stakeholders to identify funding for these projects. Initial funding for planning and preliminary engineering should be identified so that strategic projects can be positioned and ready for development if funding is identified. The lack of funding available today represents the most significant obstacle to the implementation of the Freight Plan.

12.1.3 Freight and Economic Development

Much of Louisiana's economy is dependent upon freight and goods movement. Over half of Louisiana's Gross State Product (GSP) in 2013 was generated by industries that are directly dependent on transportation, supporting nearly 30 percent of the State's workers. The implementation of the Louisiana Freight Mobility Plan is an opportunity to continue to engage freight stakeholders, economic development partners, and the business community. It also is useful to educate elected officials and policy leaders in the State so they have a better understanding of the significance of freight. This Freight Plan should be the framework for future freight planning initiatives, education and communication strategies. A follow up action to this Plan is to continue to raise awareness of the importance of freight's role in the State's economy, to address issues of concern related to freight in public forums, and to strengthen relationships with freight stakeholders and partners through shared initiatives of mutual benefit.

12.1.4 Policy Issues, Trends, and Challenges

Stakeholder outreach activities and research conducted as part of the development of this Plan identified a number of policy issues. Trends and issues including freight growth by mode were projected to 2040, and emerging trends for the growth or decline of key industries and other significant conditions influencing goods movement have been addressed. This information is presented in **Chapters 7 and 8**.

The future economic prosperity of Louisiana will be built on existing strengths and on new policies, programs, and opportunities that DOTD will pursue in a targeted and focused manner. **Chapter 10**

outlines these policies. To implement this freight mobility plan, people, businesses, organizations, and the State must work together to achieve economic success and improved quality of life.

Success will require partnership with communities, economic developers, businesses, and other freight stakeholders willing to tackle real assignments and be responsible and accountable. Additional guidance on interagency coordination and external partnerships is addressed later.

12.1.5 Engaging Partners and Stakeholders

The State should continue to build on existing and new partnerships by engaging modal partners, organizational partners, Metropolitan Planning Organizations (MPOs), economic development organizations, other state agencies, professional organizations, and multi-jurisdictional partners in an ongoing discussion about freight needs, issues, and opportunities. Interagency coordination and external partnerships must be united with a common vision and goals to advance the actions and recommendations identified in the plan. DOTD should also continue to expand its relationship with external stakeholders through the continuation of regional freight forums, presentations at economic development conferences, and participation in business roundtables in the State. DOTD should continue to participate in multi-jurisdictional partnerships that support the freight network and the businesses that it supports. Multi-jurisdictional partners include the Gulf Coast Strategic Highway Coalition, the Southeastern Association of State Highway and Transportation Officials, the Institute for Trade and Transportation Studies, and others.

Implementation of the Freight Mobility Plan should capitalize on the interest and momentum created through the freight planning process. Ongoing communication will help develop projects and implement policies as well as efforts to secure needed funding. By formalizing and continuing the involvement of the Freight Advisory Committee (FAC), freight needs and issues can be discussed regularly and a coordinated and consistent message about the importance of freight can be shared. The FAC is currently composed of private stakeholders representing industries, freight transportation modes, various geographical regions, and government agencies. The FAC is an important vehicle for continuing discussions with representatives from the public and private sector about freight policies, programs, and future resources. This Committee can provide meaningful insights and ongoing evaluations of markets, infrastructure conditions, and economic development impacts. Bringing together executive-level representatives from freight industry leaders on a quarterly basis provides a valuable platform for the discussion of freight network conditions, available resources, new financing options, and evaluation of proposed policy changes.

12.1.6 Future Freight Planning

The freight system must continue to meet the transportation needs of a continually changing economic environment, and integrate each of the freight modes with connections to a changing market of origins and destinations. Updates to this Freight Mobility Plan and other modal plans should be undertaken regularly on a five-year cycle to ensure the plan reflects the most current conditions and evolving needs for freight services within the State.

12.1.7 Funding Assessment and Financing Strategies

Like most states, Louisiana relies on the traditional federal resources available to support freight transportation services including USDOT, FHWA, USACE, FAA, FRA, discretionary TIGER Grant funding, as

well as federal financing tools such as Grant Anticipation Revenue Vehicle (GARVEE) Bonds. Beyond those traditional transportation programs, several other federal programs could provide funding for certain freight infrastructure projects through agencies including the Department of Commerce Economic Development Administration (EDA), Department of Homeland Security, Department of Agriculture Rural Community Facility Programs, and Department of Housing and Urban Development (HUD). The State should consider an evaluation of non-traditional funding and financing strategies that could be used to advance the priority projects identified in the Freight Plan.

12.1.8 Innovative Funding and Financing Programs

Many state DOT's are evaluating new financing strategies for transportation, including mileage-based user fees. While there are a number of financing programs, including GARVEE Bonds, that allow states to borrow against future government funding, these funds do not expand the available financial resources to support transportation infrastructure and facilities but can be an effective financing tool for critical near-term improvements. Many states have developed programs offering grants or low/no interest loans to facilitate needed improvements to freight infrastructure and facilities. Missouri has a program to assist airports. Ohio, Florida, Virginia, Tennessee, Washington, Texas, and others have instituted programs which dedicate funding for freight rail, ports, or intermodal facilities.

Public-private partnerships (P3) engage the private sector to fund and often operate and maintain infrastructure assets. The partnerships are contractual agreements between a public entity and the private sector that allow the private sector to participate in the delivery of transportation projects for an agreed-upon return. Thirty-three states have enacted enabling legislation allowing the use of various P3s to fund transportation projects.

P3s will not replace traditional transportation infrastructure financing, but it is one tool that can help address critical infrastructure needs. The process requires careful analysis of the most appropriate structure, risk allocation, and other objectives. Public-private partnership provides a new source of funding for infrastructure projects. Often, other benefits are realized, such as faster construction, shifting of construction and maintenance risk to private partners, and cost savings. Louisiana may benefit from looking at potential P3 opportunities for its transportation projects.

12.2 Roles and Responsibilities

A large number of individuals and agencies plan, design, operate and maintain Louisiana's freight system. **Table 12-1** presents the Plan's recommendations, and identifies the primary and supporting agencies that can implement them. This Plan assumes that the freight entities not directly involved in the Plan's development nonetheless share the objectives and values embodied in the Plan, and are potential partners in its implementation.

Table 12-1: Plan Implementation Recommendations

Recommendation	Lead	Support	Short Term	Mid Term	Long Term
Ensure freight representation and participation by private sector in the State and MPO planning process	• DOTD Office of Planning • MPOs	• Private sector freight interests	☑		
Support collaboration between DOTD and LED on identifying transportation needs, issues and impacts and recruiting industry/business into the state.	• DOTD Office of Planning • LED	• Private sector freight interests	☑		
Leverage public-private partnerships for funding non-highway improvements	• DOTD Office of Planning • Railroads • Ports/Waterways • Airports • Private sector freight interests • Private sector financial interests	• USACE • FHWA		☑	
Support multi-state coordination of freight infrastructure improvements	• DOTD Office of Planning • TXDOT Transportation Planning and Programming Division • MDOT Planning Division • AHTD Transportation Planning & Policy Division	• MPOs • FHWA • Private sector freight interests • DOTD Modal Divisions • DOTD Districts			☑
Update freight modal systems plans on a regular basis	• DOTD Modal Divisions	• DOTD Office of Planning • Federal Agencies (FHWA, FRA, FAA, etc.) • Private sector freight interests		☑	

Table 12-1 Continued

Recommendation	Lead	Support	Short Term	Mid Term	Long Term
Maintain and improve the designated Louisiana Freight Network to ensure the freight system continues to move toward achieving the transportation goals identified in the Louisiana Statewide Transportation Plan and the Louisiana Freight Mobility Plan.	• DOTD Office of Planning • MPOs	• Federal Agencies (FHWA, FRA, FAA, etc.) • Private sector freight interests • DOTD Modal Divisions	☑		
Use DOTD's freight project prioritization framework to help decision-makers prioritize future freight investments.	• DOTD Office of Planning	• MPOs • FHWA • Private sector freight interests • DOTD Modal Divisions • DOTD Districts	☑		
Refine performance measures.	• DOTD Office of Planning	• FHWA		☑	
Develop a process to identify, monitor, and restore condition of special truck routes that support the energy and mining industry.	• DOTD Office of Planning • Private sector mining interests	• MPOs • FHWA • LED • DEQ		☑	
Priority Projects	• DOTD Office of Planning	• MPOs • FHWA • Private sector freight interests • DOTD Modal Divisions • DOTD Districts	☑		
Non-Prioritized Planning Projects	• DOTD Office of Planning	• MPOs • FHWA • Private sector freight interests • DOTD Modal Divisions • DOTD Districts			☑

APPENDICES

Appendix A: National Freight Strategic Plan Recommendations

Table A-1 lists the recommendations related to assessment of barriers. They are organized by six themes: Safety and Security; Funding; Streamlining; Harmonization of Policy, Regulation and Programs; Data, Research and Education; and Technology Implementation.

Table A-1: National Freight Strategic Plan – Assessment of Barriers Recommendations

ASSESSMENT OF BARRIERS RECOMMENDATIONS
Safety and Security
Promote improved safety practices.
B1: Encourage safety practices beyond minimum compliance.
B2: Support analysis of and, where warranted from a safety standpoint considering cost, a more rapid adoption of, safety technologies including those recommended by the National Transportation Safety Board (NTSB).
Ensure safety and security in the national freight system
B3: From an operational perspective, the U.S. DOT should strive to achieve safety and security regulations in such a way as to minimize, where possible the impact on an efficient supply chain.
B4: Safety, Security and resiliency factors need to be considered and built into transportation infrastructure design and investment decisions.
B5: Employ a greater degree of risk-based management in approach to security within our freight transportation systems' operations.
Funding
Make Investment in the multi-modal national freight network a national priority.
B6: In order to ensure continued technological and innovative improvement in the nation's freight transportation system, any National Freight Policy should recognize that adequate federal funding for research efforts must be provided.
B7: Protect the existing Airport Improvement Program (AIP) trust fund grants spending levels and ensure AIP is used only for aviation-related purposes as authorized including air cargo.
B8: Create a new dedicated fund for multi-modal freight projects. First and last mile segments of regional and national significance must be included in a comprehensive freight funding program to assure freight movement is seamless across jurisdictions, modes, ports and intermodal connectors.
B9: Promote consistent funding from Inland Waterway Trust Fund and Harbor Maintenance Trust Fund for locks & dams, dredging and other projects.
B10: The Short Line Tax Credit ("45G") should be reauthorized permanently (or at least on a 5-year basis) for the efficient and effective capital and infrastructure deployment of these freight connectors.
Streamlining
Streamline the Federal Process and Other Provisions Related to NEPA and Categorical Exclusions
B11: Establish a "One-Stop Shop" Permitting & Compliance Division within U.S. DOT that is empowered to coordinate permitting reviews within U.S. DOT and across other federal agencies to be reportable and accessible via a web-based Dashboard.
B12: Air quality and climate impacts should be considered up front in planning new transportation infrastructure.
B13: Extend FAST Act streamlining provisions to pertain to all modal Administrations within U.S. DOT. These should also include all other federal agencies within the Administration that deal with freight mobility.
B14: Impose similar categorical exclusion provisions for all U.S. DOT modal agencies so that roadway, seaport, waterway, rail, and airport freight-related projects receive the same treatment regardless of the sponsoring agency within the U.S. DOT.
B15: Increase the monetary thresholds annually for Categorical Exclusions (CE) for projects with minor impacts. To keep the thresholds at the defined FAST Act levels, we recommend allowing adjustments in the thresholds based on an agreed upon index (such as the construction cost index) for Categorical Exclusions (CE) for projects with minor impacts.

Table A-1 Continued

ASSESSMENT OF BARRIERS RECOMMENDATIONS
Streamline Transportation Investment Generating Economic Recovery (TIGER) Grant Program Applications
B16: U.S. DOT should rewrite grant applications to be more streamlined so as not to discourage applicants.
Allow for "Spend Ahead" Provisions in Grant Programs
B17: Allow for "spend ahead" provisions for projects that have environmental clearance but are awaiting funding authorizations prior to advancing to the next stage of project planning and delivery.
Include Personnel and Budget Impacts in Project Approval Processes & Include Multimodal/Intermodal emphasis and give priority in Streamlining Initiative Policy
B18: U.S. DOT should assure that project approvals are not delayed due to personnel transfers and budget cycles at all modal Administration levels.
B19: U.S. DOT should encourage Congress to include Multimodal/Intermodal Emphasis in Project Delivery Policy Declaration.
Streamline processes for certification of new technologies, products or practices
B20: U.S. DOT should streamline the certification process for new products or practices that increase the safety of the freight system, and efficiency or sustainability of the freight system if an equal or greater level of safety results.
Streamline processes for prioritizing, scheduling and implementing dredging projects.
B21: Streamline lengthy process for U.S. Army Corps dredging projects; dredge when environmentally permitted "windows" are open and improve dredge disposal process.
Harmonization of Policy, Regulation and Programs
Build consistency and certainty into programs, regulation, and policy.
B22: Regional freight planning should include collaboration and streamlined interstate policies (Hours of Service, truck weight, tolling, etc.) and procedures to ensure the expedited and unimpeded movement of freight in the aftermath of man-made or natural disasters.
B23: Cross modal security programs, policies and regulations must be harmonized, including areas such as credentialing, to ensure consistency in the system and the seamless unimpeded movement of freight between modes.
B24: There needs to be consistency and certainty in regulation across project development; Federal government and States need to have improved communication mechanisms to streamline project delivery and build consistency into regulatory requirements. Transportation projects should have federal and state personnel specifically designated to coordinate adequate communication, efficient problem solving, and timely project delivery.
Facilitate international trade by reducing barriers
B25: The National Freight Policy should include a provision that specifically supports the maintenance and expansion of "open skies" agreements for the carriage of cargo that permit the liberal and flexible use of the world's airways to serve the needs of customers around the globe while considering security and job impacts.
B26: U.S. DOT should identify and quantify the reasons for delay occurring at each major U.S./Mexican border crossing.
B27: Bring the necessary stakeholders and government regulators together to develop and prioritize solutions to rail border crossing delays specific to each port of entry with Mexico.
Data, Research and Education
Improve and expand freight data collection to support research, performance monitoring, and system improvements
B28: Freight transportation agencies must improve and expand safety data collection and analysis, and ensure that it is compatible and publicly accessible to promote accountability and better safety practices

Table A-1 Continued

ASSESSMENT OF BARRIERS RECOMMENDATIONS
B29: U.S. DOT needs to address the inadequacy of multimodal freight flows (origin-destination), which are important inputs for the National Freight Strategic Plan and are not well understood.
B30: Data collection needs to be comprehensive, coordinated among federal agencies (especially with the Department of Homeland Security (DHS) (TSA, USCG, CBP)) and complete by including information from all freight infrastructure owners and freight carriers to the extent that proprietary data is protected.
B31: Strengthen data collection, including multimodal origin destination freight flows, ports of entry performance, import bottlenecks and the repositioning of empty containers for exports. U.S. DOT should evaluate the benefit of purchasing 3rd party aggregator data to fill critical gaps.
Create and invest in a multi-modal freight research program
B32: U.S. DOT should invest in a robust, multimodal, competitively awarded, unbiased, peer reviewed federal research program that covers the range of research, from basic (long range, high risk) to research development (short range) to deployment or implementation.
B33: U.S. DOT should support research on high priority national objectives of safety, efficiency and sustainability. The research should include demonstration and deployment of promising technologies and beneficial operational practices. High priority areas include, but are not limited to: a. Alternative fuels for the freight sector that exceed current Environmental Protection Agency (EPA) standards and meet cost and efficiency requirements of industry, possibly in partnership with DOE. b. Better metropolitan and regional freight models, including supply chain based modeling approaches. c. Future forecasting that considers changes in demographics, buyer behavior, manufacturing practices, and other factors that could restructure current freight supply and demand patterns. d. Causal factors of accidents and crashes, including operator fatigue and hours of service regulations e. Identification and design of operational practices that minimize community impacts and improve environmental and safety conditions while fostering economic productivity and efficiency.
Promote workforce development through training and education programs
B34: U.S. DOT, the States and other freight system owners and operators should form partnerships with high schools, colleges and universities, community colleges, vocational schools, and workforce training and apprenticeship programs to promote careers in freight transportation.
Technology Implementation
Facilitate and promote technology implementation through supportive policies
B35: U.S. DOT should invest in a technology research program that promotes technology improvements in the freight sector. Elements of a technology research program would include: 1) technologies to improve safety; 2) technologies that support interoperability and standards, 3) technologies to facilitate security and fraud inspections; 4) institutional barriers to technology adoption; 5) demonstration and evaluation projects; 6) fuel efficiency; 7) emissions reductions; 8) technologies for better real-time and near-real-time information; 9) asset management technologies; 10) technologies that support operational improvements; 11) technologies to mitigate congestion and facilitate freight flows.
B36: With the recent decision to require Original Equipment Manufacturers to produce vehicles with the ability to be connected, policies and regulations need to be examined in order to take advantage of this emerging technology as it affects freight movement.
B37: Many pilot programs and demonstrations have been undertaken by qualified researchers at the state, local and university level that may have broader applicability. U.S. DOT should identify and evaluate such promising research so that these results might be useful in other regions.

The recommendations listed in **Table A-2** relate to best practices for improving the performance of the freight network and are organized by five themes: Funding; Streamlining; Data, Research, and Education; Planning; and Capacity Enhancements/Efficiency.

Table A-2: National Freight Strategic Plan – Best Practices for Improving the Performance of the Freight Network Recommendations

Best Practices for Improving the Performance of the Freight Network Recommendations
Funding
P1: Encourage intermodal freight activity through streamlined investment.
P2: Revise federal policies to incentivize the efficient and effective use of available funding for freight projects.
P3: Address aging infrastructure, bridge weight limitations, excepted rail track; generally poor road pavement conditions within heavy-haul corridors, etc. with a priority towards State of Good Repair and Asset Management.
Streamlining
P4: U.S. DOT should continue to encourage innovative project delivery methods such as design-build by providing incentives to States. Further, U.S. DOT should assess key methods and practices that have led to project acceleration during emergencies and extenuating circumstances and identify opportunities for application to existing programs. Additionally, dredging project completion should be measured when 100 percent of the dredging is complete, not the current practice of measuring when 100 percent of the funding allocation is saturated.
P5: U.S. DOT should continue to explore section (c) CEs" Categorical Exclusions for roadway, seaport, waterway, rail, and airport freight-related projects.
P6: After all necessary approvals have been received, allow the recipients of federal funding to self-certify, at their own risk and responsibility, that their right-of-way acquisitions and project plans meet all federal requirements.
P7: The Railroad Rehabilitation and Improvement Financing (RRIF) loan process should include early indications to a potential applicant of potential 'no-go' issues before the applicant spends substantial funds on developing the total application.
P8: Develop a list of preapproved "On- Call Contractors" available for emergency dredging.
P9: FHWA's Every Day Counts (EDC) initiative should be applied to all modal Administrations within the U.S. DOT.
P10: To enhance project delivery of grade crossing improvements, there should be an approved safety and performance standard for smaller, more compact pedestrian gate designs that are suitable for sidewalk environments. FRA should engage in a research and design project to develop the design standard.
Data, Research, and Education
P11: The Freight Conditions and Performance Report and the National Freight Strategic Plan should be an interagency shared effort so that information and data sharing across the U.S. DOT agencies is facilitated more easily.
P12: Data collection efforts should be tailored to performance measures that are in line with specific outcomes that the U.S. DOT and Congress want to obtain with the increased emphasis on the multimodal national freight system.
P13: The movement of empty import International Standards Organization (ISO) containers should be studied to address the repositioning of empty containers, including those that return to their point of entry and those that are repositioned for export commodities.
P14: U.S. DOT should partner with objective third party organizations to facilitate raw and complete data collection agreements with private industry.

Table A-2 Continued

Best Practices for Improving the Performance of the Freight Network Recommendations
Planning
P15: U.S. DOT should develop a comprehensive national freight transportation plan to improve network performance that minimize community impacts and improve environmental and safety conditions while fostering economic productivity and efficiency.
P16: In the development of a national freight system, U.S. DOT should require and fund the development of State Freight Plans that will contribute to the national freight strategic plan. U.S. DOT should set up mechanisms to ensure State DOT's interact with all transportation modes, users, regional and multi-state agencies, and MPOs. U.S. DOT should consider streamlining and integrating the planning process and required reports of the modal administrations, so that multimodal planning is achieved with common understanding of terms such as freight, first and last mile, etc.
P17: Encourage and support the creation of regional, statewide, and/or multi-state institutions as appropriate with a single mission, the specialized staffing expertise to handle freight projects, and the authority to oversee, finance, and implement key initiatives could be beneficial to the expedient delivery of freight transportation projects.
P18: Establish a workgroup of NFAC members with U.S. DOT support to develop a set of recommendations designed to equip State DOT and MPO planners with the training and tools they need to be more effective partners with private sector freight stakeholders and decision makers. This workgroup could provide recommendations that could help to develop and implement the planning processes recommended in P16.
P19: The U.S. DOT in conjunction with the private sector should provide education and training programs for MPO and State DOT planning staff to expand their understanding of supply chain issues, modeling freight movements, the dynamics of multi-state corridors and the economics of mega regions and international trading patterns, among other issues.
Capacity Enhancement/Efficiency
P20: Identify and invest in ports of national significance to meet national trade objectives, including increased exports and creating a competitive trade environment.
P21: Expand the capacity of the freight system by encouraging the effective utilization of all modal and operational opportunities, e.g. off-peak cargo movements.
P22: Expedite development and implementation of air space modernization (including NextGen initiatives) to relieve air space congestion and reduce delays in air cargo delivery. Air cargo tends to be high value freight and pays a premium for fast and reliable delivery. Delay and uncertainty are serious concerns.
P23: Increase efficiencies along the supply chain by promoting electronic communications among all logistics supply chain business segments.
P24: Support programs and policies that improve efficiencies of cross border freight movement without jeopardizing safety. Specifically, border crossing inspection technology should be updated with proven, state-of-the-art technology that will speed up throughput at heavily congested locations.
P25: U.S. DOT should work with the Department of Homeland Security (DHS) to establish detailed and efficient inspection procedures that use best technology. The DHS should develop better border staffing that is more responsive to freight traffic flows. CBP staffing at border crossings, airports and marine ports, as well as Transportation Security Administration (TSA) staffing at airports, should be increased to support the burgeoning requirements of cargo screening.

The recommendations in **Table A-3** are best practices to mitigate community impacts and are organized by eight themes: Safety; Environmental Sustainability; Funding; Harmonization, Standards and Institutional Arrangements; Data, Research, Education and Reporting; Infrastructure Design; Regulation and Enforcement; and Technology Implementation (Development, Demonstrations, Deployment).

Table A-3: National Freight Strategic Plan – Best Practices to Mitigate Community Impact Recommendations

Best Practices to Mitigate Community Impacts Recommendations
Safety
C1: The NFAC encourages U.S. DOT to move forward with efforts to ensure existing safety regulations are current, and to promulgate new safety regulations, for all modes to mitigate community impacts.
C2: U.S. DOT and the modal agencies should adopt zero fatalities resulting from the movement of freight as an ultimate vision with a sense of urgency.
Environmental Sustainability
C3: In order to address this environmental sustainability challenge, U.S. DOT should incentivize holistic, multi-modal freight planning and operational strategies, risk assessment, and collaborative problem solving that involves multiple stakeholders.
Funding
C4: Develop federal programs in a way that supports and prioritizes funding of first and last mile connectors that are part of systems with regional and national significance, including both urban and rural connectors.
C5: Maintain the 23 USC 130 separate program for rail-highway grade crossing improvements; provide adequate funding to minimize safety and community impacts.
Harmonization, Standards and Institutional Arrangements
C6: U.S. DOT should encourage integrated freight and passenger transport planning, and encourage investment and operational solutions that maximize safety, and effectively utilize resources while minimizing environmental, energy, and local impacts.
C7: The national freight strategic plan should develop a set of criteria for defining best practices to be shared with freight stakeholders through the establishment of a clearinghouse of freight best practices and a program for disseminating best practices.
C8: U.S. DOT should continue to support the development of best practices toolkits for urban and rural freight transportation planning that seek to reduce freight related congestion, air emissions, parking issues, and impacts on the health and safety of transportation professionals and the public.
C9: U.S. DOT should support research on high priority national objectives of safety, efficiency and sustainability. The research should include demonstration and deployment of promising technologies that minimize community impacts and improve environmental and safety conditions while fostering economic productivity and efficiency.
Data, Research, Education and Reporting
C10: Establish a workgroup of NFAC members with U.S. DOT support to develop a set of recommendations related to best practices of private and public-sector workforce development in the freight industry. The recommendations should be based on research and analysis of the issues related to both the private and public-sector workforce of the freight industry. This workgroup could provide recommendations that could help to develop and implement the partnership recommended in P16.
C11: Improve the effectiveness of various statutory “whistleblower” safety reporting protection mechanisms in all modes through improved awareness, education, and encouraging greater labor/management coordination in this area.
Infrastructure Design
C12: U.S. DOT should support the development of definite freight delivery networks to expand delivery options across all modes and clearly designate truck routes to optimize safety and system performance and reduce community and environmental impacts.

Table A-3 Continued

Best Practices to Mitigate Community Impacts Recommendations
Regulation and Enforcement
C13: Use transportation policies and operational best practices such as strategic zoning, street design, building design and comprehensive land use policies that plan for freight activities without encroaching on freight right-of-way. The policies include economic development incentives and effective truck route planning to minimize the impacts of first and last mile freight transportation on surrounding communities.
C14: Utilize policy best practices such as buffering freight activity centers from population centers. Freight generating land uses can potentially bring great benefits to a region by providing jobs, tax dollars, and proximity of goods to growing populations and businesses.
C15: Utilize operational best practices to encourage State and local authorities to employ a comprehensive approach to enhancing freight activity in First and Last Mile environments and corridors.
C16: Enhance worker safety and training requirements for all freight workers, including wellness and fatigue management. This can be accomplished by supporting scientific and evidence based comprehensive fatigue reduction initiatives to reduce operator and worker fatigue. Further, to protect the health and welfare of transportation workers and those they interact with, regulations can insure effective minimum levels of training are required for all entry-level and new workers required to operate transportation equipment, if not already provided.
Technology Implementation (Development, Demonstrations, Deployment)
C17: Expand the use of Intelligent Transportation Systems, technology, and innovation to improve the flow of freight that minimize community impacts and improve environmental and safety conditions while fostering economic productivity and efficiency.
C18: Use technological solutions to address truck parking. There are technology companies that provide information regarding parking availability, reservation system, cashless payment and navigation information directly to the driver using smart phone technology.
C19: Promote adoption of advanced technologies and compliance methods that support and encourage ideal workforce safety practices.

Appendix B: Highway Freight Project Listing

Table B-1: Highway Capital Projects (Statewide Transportation Plan)

Project Need	Source	Description	Cost ($millions)
I-49 South	Statewide Transp. Plan	I-10 in Lafayette to Lafayette Airport, Upgrade to freeway	$750.00
I-49 South	Statewide Transp. Plan	Raceland to Des Allemands, Upgrade to freeway	$190.00
I-49 South	Statewide Transp. Plan	Lafayette Airport to LA 88, Upgrade to Freeway	$450.00
I-49 South	Statewide Transp. Plan	Des Allemands to I-310 (includes improvements to I-310/US 90 interchange), Upgrade to freeway	$470.00
I-49 South	Statewide Transp. Plan	I-310 to Avondale (East of Lapalco Blvd.), Upgrade to freeway	$253.00
I-49 South	Statewide Transp. Plan	Avondale (East of Lapalco Blvd.) to Westwego (includes HPL/US 90 Interchange upgrade), Upgrade to freeway	$270.00
I-49 South	Statewide Transp. Plan	Wax Lake outlet to Berwick	$250.00
I-49 South	Statewide Transp. Plan	Extend West Bank Expressway (Ames Blvd. to Westwego)	$150.00
I-49	Statewide Transp. Plan	Lafayette to Opelousas, I-10 to US 190	$200.00
I-20	Statewide Transp. Plan	Red River Bridge (I-49, Shreveport to Traffic Street, Bossier City), widen to 6 lanes	$135.00
I-20	Statewide Transp. Plan	LA 3 to I-220 E, Widen to 6 lanes	$90.00
I-20	Statewide Transp. Plan	LA 546 to LA 594 (Monroe), Widen to 6 lanes	$220.00
I-20	Statewide Transp. Plan	TX SL to I-220W widen to 6 lanes	$180.00
I-20	Statewide Transp. Plan	Shreveport to Minden, I-220 E to US 371	$200.00
I-20	Statewide Transp. Plan	Ruston to Monroe	$220.00
I-20	Statewide Transp. Plan	Minden to Ruston, US 371 to US 167	$380.00
I-10	Statewide Transp. Plan	TX SL to LA 108, Widen to 6 lanes	$65.00
I-10 (Calcasieu River BR./ Approaches)	Statewide Transp. Plan	I-210W to US 90 (Lake Charles), Replace bridge and widen highway	$450.00
I-10	Statewide Transp. Plan	UPRR Overpass (Lake Charles) to I-210, widen 4 to 6 lanes	$50.00
I-10	Statewide Transp. Plan	LA 93 to I-49, widen 4 to 6 lanes	$100.00
I-10	Statewide Transp. Plan	I-110 to I-12 (Baton Rouge), widen 6 to 8 lanes	$320.00
I-10	Statewide Transp. Plan	LA 42 to LA 74, widen 6 to 8 lanes and new interchange	$100.00
I-10	Statewide Transp. Plan	Williams Blvd. (LA 49) to Veterans Blvd, widen to 8 lanes	$150.00
I-10	Statewide Transp. Plan	East of Lafayette to west of Baton Rouge (Louisiana Ave to LA 1)	$950.00
I-10	Statewide Transp. Plan	Sunshine Bridge to Veterans Memorial Bridge, LA 22 to LA 641	$120.00
I-10	Statewide Transp. Plan	Lake Charles to Lafayette, US 165 to LA 93	$530.00
I-10	Statewide Transp. Plan	LA 74 to LA 22	$80.00
I-10	Statewide Transp. Plan	Elysian Fields Ave. to Bullard Ave. (New Orleans)	$225.00
I-12	Statewide Transp. Plan	Satsuma to I-55 (LA 16 to I-55)	$180.00
I-12	Statewide Transp. Plan	LA 21 to Airport Rd (to I-10/ I-59), widen 4 to 6 lanes	$170.00
I-12	Statewide Transp. Plan	Hammond to Mandeville, I-55 to LA 21	$375.00
LA 23	Statewide Transp. Plan	Belle Chasse Tunnel (New Orleans), build 4 lane bridge	$180.00
LA 3241 (TIMED)	Statewide Transp. Plan	I-12 to Bush, new 4 lane	$230.00
Florida Avenue (TIMED)	Statewide Transp. Plan	Bridge and Approaches, new bridge and approaches	$270.00
Alexandria/ Pineville Beltway	Statewide Transp. Plan	Beltway (Segments "E, F, G, H, I"/Red Route) from LA 28 East to LA 28 West, Build/Upgrade 4-lane highway (Relocate LA 28 south of urban area)	$175.00

Table B-1 Continued

Project Need	Source	Description	Cost ($millions)
I-69, SIU 15	Statewide Transp. Plan	I-20 Haughton, LA to US 171 near Stonewall, LA, New 4 lane freeway	$950.00
Houma-Thibodaux North South Connection to LA 3127 – Interstate Access Highway Phase 2	Statewide Transp. Plan	US 90 to LA 3127, build out final 2 lanes to complete 4 lane	$325.00
LA 3139 (Earhart Expressway Ramp)	Statewide Transp. Plan	Hickory Ave/Orleans Parish Line (Earhart to Airline Connector Ramp), add ramps to airline highway	$125.00
LA 3139 (Earhart Expressway Widening)	Statewide Transp. Plan	Hickory to I-310, build 6 lane freeway	$250.00
US 165/US 425 Bypass (Bastrop Bypass)	Statewide Transp. Plan	US 425 to US 165, build 2 lanes (4 lane RW)	$90.00
LA 117 Improvement	Statewide Transp. Plan	LA 8 to Military Training Ground (Peason Ridge), reconstruct 2 lanes with full shoulders	$30.00
Tarbutton Rd (LA 149)	Statewide Transp. Plan	I-20 to US 80, interchange and frontage road	$20.00
US 167/LA 82	Statewide Transp. Plan	Abbeville to Esther, build/upgrade 0/2 to 4/2 lanes	$40.00
LA 408 (Hooper)	Statewide Transp. Plan	LA 37 to LA 16	$150.00
LA 3040	Statewide Transp. Plan	Houma Tunnel	$65.00
Chalmette Bridge/I-510	Statewide Transp. Plan	Almonaster Blvd to West Bank Expressway	$1,350.00
East Bypass, Natchitoches, LA	Statewide Transp. Plan	LA 1 to LA 6	$65.00
LA 28 East	Statewide Transp. Plan	Alexandria to Archie	$275.00
US 61 (Airline)	Statewide Transp. Plan	Gonzales to Cedarcrest Avenue	$125.00
LA 67 (Plank Rd)	Statewide Transp. Plan	Baker to Clinton	$130.00
Pontchartrain Causeway	Statewide Transp. Plan	US 190 to I-10, 100% toll funded	$0.00
US 190	Statewide Transp. Plan	LA 1077 to US 11	$180.00
Lafayette Beltway	Statewide Transp. Plan	I-10 to US 90	$400.00
MacArthur Drive	Statewide Transp. Plan	I-49N to I-49S	$110.00
LA 8	Statewide Transp. Plan	TX SL to US 171	$175.00
Lafayette Loop	Statewide Transp. Plan	I-10E to I-49N to I-10W to I-49S	$1,600.00
I-210	Statewide Transp. Plan	I-10 to I-10	$165.00
US 165 Widening	Statewide Transp. Plan	Monroe Metro	$165.00
US 171 DeRidder Bypass	Statewide Transp. Plan	US 171 to US 171	$90.00
I-10/I-55 Interchange	Statewide Transp. Plan	Connection between I-10EB with I-55NB	$110.00
LA 25	Statewide Transp. Plan	Covington to Folsom	$135.00
BUMP	Statewide Transp. Plan	US 61/US 190 Connecting I-10, I-12, I-110, US 61, and US 190	$1,000.00
Earhart Expressway	Statewide Transp. Plan	US 61 to I-10	$225.00
Peters Road LA 3017	Statewide Transp. Plan	West Bank Expressway to LA 23	$110.00
LA 3132 Inner Loop	Statewide Transp. Plan	LA 523 to TBD (LA 1 or future I-69)	$160.00
Ascension/ Livingston Parkway Connector	Statewide Transp. Plan	NE Ascension Parish to SW Livingston Parish	$50.00
Hwy 378 Loop	Statewide Transp. Plan	John Stine to West Fork Bridge	$50.00
I-220 Ext to Barksdale Air Force Base	Statewide Transp. Plan	I-220 Extension to Barksdale AFB (New Gate)	$80.00
LA 30/LA 431	Statewide Transp. Plan	LA 30/431 Commercial-industrial loop (includes LA 30 to LA 492 section from 2008)	$440.00
LA 73 to I-10	Statewide Transp. Plan	Industrial Access: I-10/LA 429	$35.00
LA 1 South	Statewide Transp. Plan	Golden Meadow to Leeville (Phase 2)	$320.00

Table B-1 Continued

Project Need	Source	Description	Cost ($millions)
Houma-Thibodaux NS Connection to LA 3127 – Interstate Access Highway Phase I	Statewide Transp. Plan	US 90 to LA 3127; LA 3127	$550.00
New Bridge	Statewide Transp. Plan	Ouachita River in Monroe	$350.00
US 84	Statewide Transp. Plan	Archie to Ferriday (El Camino)	$85.00
LA 511 (J. Davis Bridge)	Statewide Transp. Plan	70th St.to Barksdale Blvd. (Shreveport)	$60.00
Pontchartrain Causeway	Statewide Transp. Plan	US 190 to I-10, Toll Funded	$0.00
LA 1 Connector	Statewide Transp. Plan	I-10 to LA 1, $125M with $60M from tolls	$65.00
Baton Rouge North Bypass	Statewide Transp. Plan	I-10 to I-12 (Baton Rouge)	$1,000.00
I-49 North (Inner City Connector)	Statewide Transp. Plan	I-20 at I-49S to I-220 at I-49N Shreveport	$380.00
Loyola Drive/I-10 interchange, Kenner	Statewide Transp. Plan	Reconstruct Loyola Interchange (Improve access to new Louis Armstrong N.O. International Airport Terminal)	$90.00
I-12 Interchange Upgrade Projects	Statewide Transp. Plan	I-12 @ LA 21, US 190, LA 434, and Northshore Blvd.	$160.00
New MRB	Statewide Transp. Plan	LA 1 to LA 30	$800.00
I-69, SIU 14	Statewide Transp. Plan	I-20 Haughton, LA to AR SL	$1,212.00
LA 1 South	Statewide Transp. Plan	Port Fourchon to US 90 (Phase 1)	$1,300.00
Z. Taylor Parkway	Statewide Transp. Plan	I-49 to I-59	$1,750.00
Ouachita Loop	Statewide Transp. Plan	I-20 Monroe to I-20 West Monroe	$600.00
US 65	Statewide Transp. Plan	LA 15 to AR SL	$870.00
Acadiana Trail, US 190/ LA 12	Statewide Transp. Plan	TX SL to Basile (Acadiana Trail)	$600.00
LA 117 Widening	Statewide Transp. Plan	LA 8 to LA 6	$380.00
US 165	Statewide Transp. Plan	I-10 to I-20	$2,700.00
LA 1	Statewide Transp. Plan	LA 169 to LA 538	$30.00
LA 1 (Tri-State)	Statewide Transp. Plan	LA 538 to AR SL	$220.00
LA 6 / US 84	Statewide Transp. Plan	TX SL to Archie (El Camino)	$925.00
Donner Rd.	Statewide Transp. Plan	West Bank Expressway to Peters Rd	$110.00
Baton Rouge South Bypass	Statewide Transp. Plan	I-10 to I-12 (Baton Rouge)	$2,170.00
LA137/133, US 425	Statewide Transp. Plan	I-20 Rayville to Bastrop	$260.00

Table B-1 Continued

Project Need	Source	Description	Cost ($millions)
I-10 Alternative, US 165/190	Statewide Transp. Plan	US 165, I-10 to US 190; US 190, US 165 to I-49	$1,075.00
US 371	Statewide Transp. Plan	US 71 to AR SL	$50.00
West Side Expressway	Statewide Transp. Plan	I-310 (St. Charles Parish) to I-10 (WBR Parish) (West Bank Connector)	$1,700.00
Alexandria/Pineville Beltway	Statewide Transp. Plan	Beltway (Segment "J"/Green Route) from LA 28 West to I-49	$20.00
LA 25	Statewide Transp. Plan	Folsom to Mississippi	$250.00
Leake Avenue	Statewide Transp. Plan	Port of New Orleans	$75.00
I-10 connector	Statewide Transp. Plan	I-10 to US 61 with interchange	$110.00
		Total	**$38,665.00**

Source: DOTD

Table B-2: Highway Capacity Projects (Highway Priority Program)

Project Need	Source	Description	Cost ($millions)
PORT ALLEN CANAL BRIDGE	Highway Priority Program	BRIDGE REPLACEMENT	$60.00
I-10 OVERPASS OVER US 165 & MP R.R.	Highway Priority Program	NEW BRIDGES	$30.00
I-10: E. JCT. I-49 TO LA 328	Highway Priority Program	RUBBLIZE AND OVERLAY AND WIDEN TO 3 LANES IN EACH DIRECTION	$121.26
I-10: LA 347 TO ATCHAFALAYA FLDWY BR	Highway Priority Program	REHABILITATION	$23.35
I-10: TEXAS STATE LINE-E. OF COONE GULLY	Highway Priority Program	WIDEN TO 6 LANES	$65.00
I-20, WESTERFIELD - INDUSTRIAL	Highway Priority Program	BRIDGES REHAB.	$33.93
LA 3105: UNDERPASS @KCS S OF I-20 (BOSSIER)	Highway Priority Program	GRADE SEPARATE EXISTING AT-GRADE CROSSING	$9.40
I-10: RESERVE RELIEF CANAL - I-55 NB RAMP	Highway Priority Program	ROADWAY MAINTENANCE RESTORATION & REHAB	$10.00
I-12: LIVINGSTON PAR APPROACH SLAB REP P2	Highway Priority Program	ROADWAY MAINTENANCE RESTORATION & REHAB	$7.20
US 90Z: WESTBANK EXPRESSWAY REHAB	Highway Priority Program	MAJOR BRIDGE REHABILITATION	$12.00
I-10: NO EAST DRAIN CANAL BRIDGE REPLACE	Highway Priority Program	BRIDGE REPLACEMENT	$11.76
LA 59: CURVE REALIGN AND TUNNEL AT TRACE	Highway Priority Program	REALIGN CURVE & PROVIDE A TUNNEL FOR TAMMANY TRACE CROSSING	$2.65
LAKE CHARLES ITS PHASE 2	Highway Priority Program	ITS DEPLOYMENT AS PER REGIONAL ARCHITECTURE	$2.58
I-20: EXIT LANE EXTENSION (EXITS 3 & 5)	Highway Priority Program	EXTEND EXIT LANES FOR DECELLERATION. PCC PAVEMENT	$0.90
GRADE RAISING I-10 RAMPS @ LA 3188 INT.	Highway Priority Program	RAISING THE EXISTING GRADE OF THE I-10 RAMPS AT LA 3188	$0.30
I-20: MONKHOUSE TO W END OF HUDSON ST BR	Highway Priority Program	REMOVE AND REPLACE PCC	$20.00
I-10: LA 328 TO LA 347	Highway Priority Program	RUBBLIZE AND OVERLAY AND WIDEN TO 3 LANES IN EACH DIRECTION	$101.84

Table B-2 Continued

Project Need	Source	Description	Cost ($millions)
I-20 MRB SOIL AND SCOUR STABILIZATION	Highway Priority Program	IMP SLOPE & SOIL STABILITY AROUND PIERS E1 & E2 ADD RIP RAP	$27.95
US 90 OVER MISS RVR (GNO2)-CLEAN & PAINT	Highway Priority Program	BRIDGE REPAIRS, CLEANING & PAINTING	$9.00
US90Z: HARVEY CANAL TUNNEL REHABILITATION	Highway Priority Program	CLEANING, MECHANICAL, ELECTRICAL AND STRUCTURAL REHABILITATION	$12.70
I-20: MRB ISLAND ANCHORING PIER E1	Highway Priority Program	REHABILITATION	$27.00
US 90: IMP @ US 90B & NEAR LA 18	Highway Priority Program	EXTEND ACCELERATION LANE AT THE INTERSECTION OF US 90B	$0.55
LA 59: ROUNDABOUT @ LONESOME RD.	Highway Priority Program	CONSTRUCT ROUNDABOUT	$1.71
LA 59: ROUNDABOUT @ SHARP RD.	Highway Priority Program	CONSTRUCT ROUNDABOUT	$1.91
DIST. 04 SIGNAL TIMING STUDIES PHASE 2	Highway Priority Program	IMPROVE SIGNAL TIMING FOR DISTRICT 04 CORRIDORS	$0.20
US 90: CAPT CADE TO AMB CAFF FRONTAGE RD	Highway Priority Program	NEW CONSTRUCTION OF FRONTAGE RDS	$7.50
US 90: ALBERTSON TO SOUTHPARK FRONTAGE RD	Highway Priority Program	FRONTAGE RD CONSTRUCTION	$6.00
I-20: EB EXIT RAMP AT LA 3105 EXTENSION	Highway Priority Program	EXTEND EXIT RAMP	$0.60
I-10 BONNET CARRE EMERGENCY CROSSINGS	Highway Priority Program	EMERGENCY CROSSING UPGRADES	$0.07
I-10 ATCHAFALAYA EMERGENCY CROSSINGS	Highway Priority Program	EMERGENCY CROSSOVERS UPGRADE	$0.11
SHREVEPORT ITS PHASE 4	Highway Priority Program	DEPLOY ITS EQUIPMENT AND COMMUNICATIONS.	$0.20
I-10 RAMP METERS BATON ROUGE	Highway Priority Program	INSTALLING I-10 RAMP METERS	$1.50
I-220: EB EXIT RAMP IMPROVEMENT AT LA 3	Highway Priority Program	EXTENDING TURN LANE TO PROVIDE ADDITIONAL VEHICLE STORAGE	$0.15
NELSON INTERCHANGE IMPROVEMENTS	Highway Priority Program	IMPROVEMENTS TO THE NELSON INTERCHANGE	$14.80
LA 1 OVER I-49 BRIDGE REHABILITATION	Highway Priority Program	BRIDGE OVERPASS REHABILITATION	$5.20
ROUNDABOUT @ LA 726 AND I-49 FRONTAGE RD	Highway Priority Program	CONSTRUCT ROUNDABOUT	$1.70
I-310: LULING BR DECK OVERLAY & REPAIR	Highway Priority Program	REMOVE AND REPLACE BRIDGE DECK OVERLAY & STRUCTURAL REPAIRS	$20.00
LAKE CHARLES ITS PHASE 3	Highway Priority Program	THIS PROJECT INCLUDES INSTALLING CAMERAS & DMSS ALONG I-210.	$3.00
W PRIEN LAKE RD RELOCATION	Highway Priority Program	NEW ALIGNMENT	$15.20
I-210: W JCT I-10 - E JCT I-10	Highway Priority Program	OGFC	$3.50
LA MIDLAND RR OVERPASS REPLACEMENT	Highway Priority Program	REPLACE RR OVERPASS/BRIDGE REMOVAL	$0.69
DIST 03 BRIDGE JT REPAIRS & OVERLAY	Highway Priority Program	DECK JT REPAIRS & DECK OVERLAY	$0.98
LA 22: NEAR I-10 GEOMETRIC IMPROV	Highway Priority Program	IMPROVE THE SAFETY OF LA 22 USING ACCESS MGMENT (J-TURNS)	$2.40
EAST PEARL RIVER BRIDGE	Highway Priority Program	BRIDGE REPLACEMENT	$15.00

Table B-2 Continued

Project Need	Source	Description	Cost ($millions)
LA 3132: EB ENTRANCE LANE EXTENSION	Highway Priority Program	EXTENDING ACCELERATION LANE FROM ENTRANCE RAMP	$0.25
US 371: BI-DIRECTIONAL TURN LANE AT LA 4	Highway Priority Program	ADDING LEFT TURN LANES AT LA 4 IN BOTH DIRECTIONS	$0.40
UNION PACIFIC R.R. OPASS NEAR TULLOS	Highway Priority Program	BRIDGE REPLACEMENT	$3.50
LA 1: NEW RR BRIDGE@DOW SPUR XING (WBR)	Highway Priority Program	GRADE SEPARATE EXISTING AT-GRADE CROSSING	$20.00
US 61: TURN LANE IMPROVEMENTS @ LA 621	Highway Priority Program	TURN LANE IMPROVEMENTS	$1.50
US 90 BRIDGE OVER LA 14	Highway Priority Program	BRIDGE REHABILIATION	$5.00
LA 73 (GOVT ST) EAST BLVD - LOBDELL AVE	Highway Priority Program	CONVERSION OF 4-LANE UNDIVIDED TO 3-LANE	$9.32
MONROE ITS PHASE 2	Highway Priority Program	THIS PROJECT WILL INSTALL CCTVS, DMSS, AND A RR WARNING.	$1.20
IC SEVERAL RR XINGS (EBR & E. FELICIANA)	Highway Priority Program	UPGRADE ACTIVE WARNING DEVICES	$1.40
TRAFFIC SIGNAL COORD & SYNCH PH VII(EBR)	Highway Priority Program	TRAFFIC SIGNAL COORDINATION AND SIGNAL SYNCHRONIZATION	$8.25
UNION PACIFIC RAILROAD BRIDGE AT SICARD	Highway Priority Program	BRIDGE REPLACEMENT	$7.78
RED CHUTE AND OLD CHANNEL BRIDGES	Highway Priority Program	BRIDGE REPLACEMENT	$4.30
LA 30 ROUNDABOUTS @ TANGER MALL & I-10	Highway Priority Program	3 ROUNDABOUTS ON LA 30 INCLUDING 2 AT THE I-10 RAMPS	$8.00
LA 31 & LA 92: ROUNDABOUT	Highway Priority Program	ROUNDABOUT	$1.00
LA 1: ITS EQUIPMENT UPGRADE	Highway Priority Program	UPGRADING AND PROVIDING NEW ITS EQUIPMENT	$1.00
DISTRICT 02H: SIGNAL TIMING	Highway Priority Program	SIGNAL TIMING	$0.01
US 190 ITS DEPLOYMENT	Highway Priority Program	DEPLOY ITS EQUIPMENT AND COMMUNICATIONS	$1.50
LA 1 BRIDGES NEAR GRAND ISLE	Highway Priority Program	NEW BRIDGE	$3.70
TRAFFIC SIGNAL COORD & SYNCH PH VI (EBR)	Highway Priority Program	TRAFFIC SIGNAL COORDINATION & SYNCHRONIZATION	$8.13
VERMILION RIVER MOVABLE BRIDGES REHAB	Highway Priority Program	MOVABLE BRIDGE REHABILITATION	$7.99
LA 146 BRIDGES NEAR KELLEYS	Highway Priority Program	NEW BRIDGES	$7.65
US 165: RIGHT TURN LANE AT LA 112	Highway Priority Program	CONSTRUCT RIGHT TURN LANE ON US 165 TO THE INTERSECT LA 112	$0.32
LA 183: REALIGNMENT NEAR FRANKLIN FARMS	Highway Priority Program	INTERCHANGE IMPROV., NEW ROADWAY, ROADWAY WIDENING	$90.00
US 425: ROUNDABOUT @ JULIA & LOUISA	Highway Priority Program	INSTALL ROUNDABOUT	$1.20
MISSOURI PACIFIC R.R. OVERPASS	Highway Priority Program	BRIDGE REHAB.REDECK & MAYBE WIDEN	$6.50
US 61: JEFFERSON HIGHWAY OVERPASS	Highway Priority Program	BRIDGE REPLACEMENT	$6.85

Table B-2 Continued

Project Need	Source	Description	Cost ($millions)
MONROE ITS PHASE 3	Highway Priority Program	THIS PROJECT WILL INSTALL CCTVS ALONG US 80.	$2.50
US 167 & US 63: TURN LANE @ REYNOLDS DR	Highway Priority Program	US 167 ADD RT TURN LANE AT REYNOLDS RD	$0.70
CADDO LAKE BRIDGE	Highway Priority Program	BRIDGE REPLACEMENT	$21.40
IC (KENTWOOD) LA 38 RR X-ING IN KENTWOOD	Highway Priority Program	RAILROAD SIGNALS AND SURFACE WORK	$0.50
LA 182 & LA 58: MOVABLE BRIDGE REHAB	Highway Priority Program	MOVABLE BRIDGE REHABILITATION	$9.34
US 61: BAYOU MANCHAC & FRANCOIS BRS.	Highway Priority Program	NEW BRIDGES	$12.00
LA 3127: RIGHT TL @ ASPHALT PLANT RD	Highway Priority Program	ADD RIGHT TURN LANE AND ACCELERATION LANE	$0.40
SUGARHOUSE RD. RECONSTRUCTION	Highway Priority Program	RECONSTRUCT	$4.95
LA 417 & LA 10: STAB, OVLAY & MAT ACQ	Highway Priority Program	STABLIZE, OVERLAY & MATERIAL ACQUISITION	$6.36
ACADIAN ROAD ROUNDABOUT	Highway Priority Program	5 LEGGED ROUNDABOUT	$1.57
SALINE BAYOU BRIDGE	Highway Priority Program	BRIDGE REPLACEMENT	$3.44
LA 1: UP RR XING (CADDO)	Highway Priority Program	UPGRADE RR WARNING DEVICES	$0.05
LA 3002: J-TURN	Highway Priority Program	ADD SOUTH BOUND J-TURN FOR LEFT TURNING VEHICLES EXITING CVS	$0.60
BOUEF RIVER BRIDGE	Highway Priority Program	BRIDGE REPLACEMENT	$7.00
LA 23 (ENGINEERS RD. - LAPALCO)	Highway Priority Program		$6.25
US 90: LA 92 @ YOUNG ST INTERCHANGE	Highway Priority Program	WIDENING OF US 90 AND CONSTRUCTION OF INTERCHANGE	$40.00
US 90: PEARL RIVER BRIDGES	Highway Priority Program	NEW BRIDGES	$24.38
US 71: TURN LANES FOR EMERG STAGING AREA	Highway Priority Program	MILL, CONSTRUCT TURN LANES, AND INSTALL PAVEMENT STRIPING	$1.00
LA 559: REPLACE DUTY FERRY WITH BRIDGE	Highway Priority Program	FEASIBILITY STUDY TO REPLACE DUTY FERRY WITH A BRIDGE	$36.00
JOES BAYOU & CARRAWAY LAKE BRIDGES	Highway Priority Program	NEW BRIDGES	$2.87
LA 175: NB LEFT TURN LANE AT LA 3015	Highway Priority Program	ADDING LEFT TURN LANE TO IMPROVE TRAFFIC FLOW	$0.35
DIST 08 BRIDGE DK OVERLAYS & PAINTING	Highway Priority Program	BRIDGE DECK EPOXY OVERLAY	$1.41
ALEXANDRIA ITS PHASE 3	Highway Priority Program	THIS PROJECT INCLUDES INSTALLING CCTVS AND DMSS.	$1.60
IHNC AND ALGIERS CUTOFF BRIDGE REHAB	Highway Priority Program	FINGER JOINTS, ROCKER BEARINGS & DECK OVERLAY	$8.33
US 80 OVERPASS @ KCS RR	Highway Priority Program	BRIDGE REPLACEMENT	$22.00
CAMERON FERRY TRAVELER MESSAGE SIGNING	Highway Priority Program	DYNAMIC MESSAGE SIGNS INSTALLATION	$0.30
LA 146 BRIDGES NEAR VIENNA	Highway Priority Program	NEW BRIDGES	$3.57
LA 30 & LA 74: INTERSECTION IMPROVS	Highway Priority Program	TURN LANE ADDITIONS AND CLOSURE OF SELECTED CROSSOVERS	$1.50
LA 125: LA 3259 - ALPS ROAD	Highway Priority Program	ASPHALT OVERLAY OF ASPHALT PAVEMENT	$2.00

Table B-2 Continued

Project Need	Source	Description	Cost ($millions)
LA 175: IMPROVEMENT BTWN US 84 & LA 509	Highway Priority Program	LENGTHEN TURN LANE, ADD TURN LANE AND MINOR WIDENING	$0.90
LA 175: TURN LANES @ LA 5	Highway Priority Program	ADD TURN LANES	$0.80
LA 182: BERWICK BAY BRIDGE REHAB	Highway Priority Program	BRIDGE CLEANING, PAINTING AND STRUCTURAL REPAIRS.	$15.00
DIST. 61 TRAFFIC CONTROL UPGRADE 3	Highway Priority Program	SIGNALS TO BE UPGRADE TO CURRENT DOTD STANDARDS	$1.50
LA 22 (DALWILL BLVD - US 190)	Highway Priority Program	WIDENING AND DRAINAGE IMPROVEMENT	$5.90
US167(JOHNSTON ST) @LA3073(AMB CAFF PKWY)	Highway Priority Program	INTERSECTION IMPROVEMENT	$2.50
US 90: RAMPS @ LA 88 ROUNDABOUTS	Highway Priority Program	ROUNDABOUTS, J-TURNS, U-TURNS, AND RELATED WORK.	$4.80
PIGEON CREEK	Highway Priority Program	NEW BRIDGE	$1.61
LA 948: EXTEND WB RIGHT TURN LANE	Highway Priority Program	EXTEND WESTBOUND RIGHT TURN LANE FOR ADDITIONAL CAPACITY.	$0.60
LA 4: BEE BRANCH BRIDGE	Highway Priority Program	NEW BRIDGE	$1.31
US 71: WIDENING OF SERVICE RD CONNECTIONS	Highway Priority Program	WIDEN EXISTING SERVICE ROAD CONNECTIONS	$0.27
US 90 RAILROAD OVERPASS SE OF LA 85	Highway Priority Program	BRIDGE OVERPASS	$15.00
ROGUE BAYOU BRIDGE	Highway Priority Program	BRIDGE REPLACEMENT	$3.06
LA 20 BAYOU CHEVREVIL BRIDGE	Highway Priority Program	BRIDGE REHABILITATION	$0.82
LA 12 SABINE RIVER BRIDGE	Highway Priority Program	NEW BRIDGE	$4.35
WILLIAMS/US61 INTERSECTION IMPROVEMENTS	Highway Priority Program	INTERSECTION ENHANCEMENTS	$1.46
LA 124: HOOTER CREEK BRIDGE	Highway Priority Program	BRIDGE REPLACEMENT	$1.50
LA 308: CURVE REALIGN AND SHOULDERS	Highway Priority Program	REALIGN CURVE AND ADD SHOULDERS	$11.66
I-20: US 80 OVERPASS BRIDGE REPLACEMENT	Highway Priority Program	REPLACEMENT OF BRIDGE OVERPASS	$3.41
LA 835 CREEK BRIDGES	Highway Priority Program	NEW BRIDGES	$2.89
DIST 61 BRIDGE DK JT & MISC REPAIRS	Highway Priority Program	GROUT. REMOVE. REPLACE BEARINGS	$2.18
US 167: ACCESS MANAGEMENT (LFT TURN LNS)	Highway Priority Program	ACCESS MANAGEMENT, LEFT TURN LANES AND U-TURNS	$3.60
LA 124: ENTERPRISE - LA 559	Highway Priority Program		$1.01
JUBAN RD WIDENING (I-12 - US 190)	Highway Priority Program	WIDENING (CONC PAVEMENT)	$11.58
US 61: LEFT TURN LANE AT LOG MILE 6.0	Highway Priority Program	ADD LEFT TURN LANE	$0.35
US 90 OVER I-10 RAMPS @ LOCKMOOR	Highway Priority Program	BRIDGE REPLACEMENT	$12.25
US 71 AND LA 3170 TURN LANES	Highway Priority Program	ADD TURN LANE AND INSTALL CONCRETE ISLAND	$0.40

Table B-2 Continued

Project Need	Source	Description	Cost ($millions)
US 90: LA 182 - LA 1	Highway Priority Program	COLD PLANE AND OVERLAY EXISTING ASPHALTIC CONCRETE PAVEMENT	$3.94
I 10 - US 61 OVERPASS	Highway Priority Program	BRIDGE REHABILITATION	$4.00
LA 3032: LT TURN LANES AT CAMILLA DR	Highway Priority Program	ADDING LEFT TURN LANES IN THE MEDIAN IN BOTH DIRECTIONS	$0.30
BOUDREAUX CANAL BRIDGE	Highway Priority Program	BRIDGE REPLACEMENT	$30.00
US 84: LEFT TURN LANES AT LA 481	Highway Priority Program	ADDING A LEFT TURN LANES IN BOTH DIRECTIONS AT LA 481	$0.40
LA 772 - HAIR CREEK(JENA)	Highway Priority Program	WIDENING	$50.00
ALEXANDRIA ITS PHASE 2	Highway Priority Program	INSTALLING BRIDGE ADVISORIES, CCTVS, AND DMSS	$1.80
US90 FRTG ROAD DRAIN BR NEAR JEANERETTE	Highway Priority Program	NEW BRIDGE	$1.19
US 90: J-TURNS - ST. MARY PARISH	Highway Priority Program	INTERSECTION IMPROVEMENTS AND MEDIAN CROSSOVERS CONSTRUCTION	$4.50
22' PAVEMENT - JCT. US 165	Highway Priority Program	WIDENING & O'LAY W/CURVE REALIGN.	$1.12
US 167: TURN LANE IMPROVEMENT AT HODGE	Highway Priority Program	TURN LANE IMPROVEMENT	$0.25
US HWY 84 IMPROVEMENTS	Highway Priority Program	MAJOR WIDENING	$ --
E. BATON ROUGE PARISH LINE - W JCT LA 16	Highway Priority Program	MAINTENANCE RESTORATION & REHABILITATION	$1.21
LA 3: LEFT TURN LANE	Highway Priority Program	INSTALL LEFT TURN LANE	$0.35
US 11: LAKE PONTCHARTRAIN BRIDGE REHAB	Highway Priority Program	MAJOR BRIDGE REHABILITATION	$25.00
US 71: UP RR OVERPASS NEAR TIOGA	Highway Priority Program	BRIDGE REPLACEMENT	$15.86
LA 3132 AT LA 523: EXTEND C OF A	Highway Priority Program	EXTEND CONTROL OF ACCESS LA 3132 AT LA 523	$2.33
WIDEN INTERSECTIONS AT LA 67 & LA 10	Highway Priority Program	SAFETY - WIDEN INTERSECTION	$0.30
LA 121: CALCASIEU RIVER BRIDGE	Highway Priority Program	BRIDGE REPLACEMENT	$8.90
US80: RED RIVER BR. TEXAS ST. REHAB (HB)	Highway Priority Program	CLEANING AND PAINTING, AND STRUCTURAL REPAIRS.	$5.00
INSTALL SE LA PERM CONTRAFLOW SIGNING	Highway Priority Program	SE LA - PERMANENT SIGNING FOR CONTRAFLOW EVACUATION EVENT	$1.21
LA 3073: INTERSECT IMPROVE @ JCT LA 89	Highway Priority Program	CONSTRUCT TURN LANES	$0.90
US 190 @ NORTHSHORE BLVD	Highway Priority Program	INTERSECTION IMPROVEMENTS	$2.30
LA 431 @ LA 934 INTERSECTION IMPROVEMENT	Highway Priority Program	TURNLANES	$0.75
LA 300: LA 1245 - END LA 300 (DELACROIX)	Highway Priority Program	ASPHALT OVERLAY, PATCHING, GUARD RAIL, STRIPING	$2.00
LA 88: REALIGN CURVES IN COTEAU	Highway Priority Program	REALIGN 2 CURVES ON LA 88 IN COTEAU	$4.03

Table B-2 Continued

Project Need	Source	Description	Cost ($millions)
LA 56: RIGHT TURN LANE AT LA 24	Highway Priority Program	ADD RIGHT TURN LANE ON LA 56 AT LA 24	$0.15
I-55: RAMP WIDENING, NB OFF RAMP @ LA 16	Highway Priority Program	RAMP WIDENING, ADDITIONAL TURN LANE ON EXIT RAMP	$0.30
LA 1: UP RR XING (WEST BATON ROUGE)	Highway Priority Program	REMOVE CROSSING	$0.30
EL CAMINO EAST/WEST COR (EAST SEG)	Highway Priority Program	MAJOR WIDENING LA 117 TO I 49	$25.00
US 171: ADD ACCELERATION LANE CRYER RD	Highway Priority Program	CONSTRUCT ACCELERATION LANE SOUTH OF CRYER CEMETERY RD	$0.30
LA 3094: HEARNE AV BR REHAB	Highway Priority Program	REPLACE SUPERSTRUCTURE, RAISE GRADE, ROADWAY & EMBANKMENT WK	$2.70
LA 82 BRIDGES NEAR ESTHER	Highway Priority Program	BRIDGE REPLACEMENT	$2.00
LA 157: SB LEFT TURN LANE AT LA 154	Highway Priority Program	ADD LEFT TURN LANE TO IMPROVE TRAFFIC FLOW	$0.35
LA 22: ROUNDABOUT DUNSON/RIDGEDELL RDS.	Highway Priority Program	CONSTRUCT ROUNDABOUT @ LA 22/DUNSON/RIDGEDELL	$1.00
UP R.R. OVERPASS NEAR BONITA	Highway Priority Program	NEW BRIDGE	$8.93
LA 70: GATOR LANDFILL TURN LANE	Highway Priority Program	TURN LANE	$1.50
US 90: FLOODWALL - CHEF PASS BRIDGE	Highway Priority Program	RAISING ROADWAY GRADE TO CONSISENT ELEVATION BY ADDING ASPHT	$0.60
LA 28: LEFT TURN LANES AT LA 116	Highway Priority Program	LEFT TURN LANE ON LA 28 AT THE INTERSECTION OF LA 116	$0.45
LA 1019: LA 16-CALMES RD DRAINAGE	Highway Priority Program	REMOVE AND REPLACE PIPES, CATCH BASINS, AND/OR ASPHALT	$0.30
US 80 STEEP BAYOU BRIDGE	Highway Priority Program	NEW BRIDGE	$1.28
SALINE BAYOU RELIEF BRIDGE	Highway Priority Program	BRIDGE REPLACEMENT	$1.18
LA 12: TEXAS STATE LN - LA 109	Highway Priority Program	CP 2", OVERLAY 4", 2" SHLD	$2.31
LA 30: LEFT TURN LANE AT S. PURPERA AVE	Highway Priority Program	CONSTRUCT LEFT TURN LANE FOR EASTBOUND TRAFFIC	$0.61
OVERFLOW CREEK BRIDGE	Highway Priority Program	BRIDGE REPLACEMENT	$1.56
LA 182: ROUNDABOUT AT HOLLYWOOD RD	Highway Priority Program	ADD ROUNDABOUT	$0.60
US 171: J-TURN @ N. PERKINS FERRY RD.	Highway Priority Program	INSTALL TURN LANES (RIGHT, LEFT AND J-TURN)	$0.75
DRAIN BRIDGE NEAR STONEY POINT	Highway Priority Program	BRIDGE REPLACEMENT	$1.09
US 90: BAYOU BRIDGE	Highway Priority Program	BRIDGE REPLACEMENT	$1.37
LA 12 BRIDGES	Highway Priority Program	NEW BRIDGES	$29.90
LA120: BRIDGES NEAR PROVENCAL	Highway Priority Program	BRIDGE REPLACEMENT	$2.00

Table B-2 Continued

Project Need	Source	Description	Cost ($millions)
I-20: WEST END HUDSON ST. BRIDGE TO I-49	Highway Priority Program	REMOVE AND REPLACE PCC	$15.00
CANE RIVER BRIDGE AT CHURCH STREET	Highway Priority Program	BRIDGE REPLACEMENT	$4.00
BAYOU TECHE MOVABLE BRIDGES REHAB	Highway Priority Program	MOVABLE BRIDGE REHABILITATION	$7.84
US 84: LAS RAILROAD OVERPASS BR REHAB	Highway Priority Program	REHABILITATION OF RAILROAD BRIDGE OVERPASS	$0.99
LA 1025: CREEK BR. NEAR FRIENDSHIP	Highway Priority Program	NEW BRIDGE	$0.57
US 190 @ LA 415: LOBDELL INTERCHANGE	Highway Priority Program	NEW BRIDGE	$55.87
YOU WINN RD./ GLORIA DRIVE @ US 171	Highway Priority Program	INTERSECTION REALIGNMENT	$0.95
US 90: EDGERLY - SULPHUR	Highway Priority Program	CP 2", PATCH, OVERLAY 4"	$3.83
INTERCHANGE US 90 @ LA 318	Highway Priority Program	NEW INTERCHANGE. DESIGN-BUILD PROJECT	$60.00
CHEF MENTEUR PASS BRIDGE & APPROACH	Highway Priority Program	BRIDGE REPLACEMENT	$85.00
LA 22: TURN LN@WAGNER, DRUDE, & KRAFT RDS	Highway Priority Program	LT & RT TURN LN @ WAGNER AND DRUDE RD. LT TURN LN @ KRAFT	$0.90
LA 10: CUMBERLAND ST-AUSTIN ST(BOGALUSA)	Highway Priority Program	LANE CONFIGURATION MODIFICATION	$0.15
I-110: NORTH ST. - PLANK RD.	Highway Priority Program	RECONSTRUCT JCP @ GRADE	$21.00
BAYOU FIFI BRIDGE	Highway Priority Program	BRIDGE REPLACEMENT	$1.02
BAYOU BOEUF BRIDGE GIRDER REPLACEMENT	Highway Priority Program	GIRDER REPLACEMENT AND ASSOCIATED DECK AND RAIL	$0.65
LA 146 BRIDGES NEAR HOMER	Highway Priority Program	NEW BRIDGES	$6.07
US 79 BYPASS @ LA 9 ROUNDABOUT	Highway Priority Program	DESIGN AND CONSTRUCTION OF ROUNDABOUT	$2.95
PARMERS CREEK BRIDGE	Highway Priority Program	NEW BRIDGE	$1.84
US 79: NB LEFT TURN LANE AT MILLER ROAD	Highway Priority Program	ADDING LEFT TURN LANE AT MILLER ROAD (WEBSTER PARISH)	$0.35
LA 1199: LA 112 - LA 121	Highway Priority Program	CTB AND OVERLAY	$3.48
US 90: ATCHAFALAYA RIVER BRIDGE REHAB	Highway Priority Program	BRIDGE CLEANING, PAINTING AND STRUCTURAL REPAIRS.	$21.00
SULLIVAN RD (WAX - HOOPER)	Highway Priority Program	4 LN DIVIDED CONC HWY RAISED MEDIAN	$25.00
LA 24 & LA 316: COMPANY CANAL BRIDGE	Highway Priority Program	BRIDGE REPLACEMENT	$16.70
US 61 & LA 73: IMPROV'S AT PECUE LANE	Highway Priority Program	INTERSECTION MODIFICATIONS	$0.90
CROSS BAYOU BRIDGE REPLACEMENT	Highway Priority Program	BRIDGE REHAB	$2.80
LA 82: SUPERIOR CANAL BRIDGE	Highway Priority Program	BRIDGE REPLACEMENT - MOVEABLE BRIDGE	$11.16

Table B-2 Continued

Project Need	Source	Description	Cost ($millions)
LA 942 REHABILITATION	Highway Priority Program	REHABILITATION	$0.72
LA336-1: BAYOU TECHE BRIDGE REHAB (HB)	Highway Priority Program	CLEANING AND PAINTING, AND STRUCTURAL REPAIRS	$1.50
MONROE ITS PHASE 4	Highway Priority Program	THIS PROJECT WILL INSTALL CCTVS.	$2.80
LA 580: LA 877 TO US 65	Highway Priority Program	ASPHALT OVERLAY OVER IN PLACE STABILIZED BASE	$6.88
LA 27&LA 1256:0.97 MI S LA1133- I-10 INT	Highway Priority Program	PATCH, CP 2", OL 4"	$3.86
LA 532 OVER I-20 BRIDGE REPLACEMENT	Highway Priority Program	BRIDGE REPLACEMENT	$3.52
US 90: INTERSECTION IMP AT MLK BLVD	Highway Priority Program	INTERSECTION IMPROVEMENTS ON US 90 AT MLK BLVD	$0.50
US 90: IMP @ US 90B & NEAR LA 18	Highway Priority Program	EXTEND ACCELERATION LANE AT THE INTERSECTION OF US 90B	$0.55
LA 22: IC RR XING (PONCHATOULA)	Highway Priority Program	NEW RR SURFACE AND LEDS FOR RR FLASHING LIGHTS.	$0.20
INTERSECTION IMPROVEMENT LA 2 @ LA 15	Highway Priority Program	INTERSECTION IMPROVEMENTS	$0.20
INTERSECTION IMPROVEMENT LA 33 @ LA 15	Highway Priority Program	WIDEN INTERSECTION WITH ASPHALTIC CONCRETE	$0.21
LA 28: TURN LANE IMPROVEMENTS	Highway Priority Program	TURN LANE IMPS AT HEYMAN LANE AND GEORGETOWN DRIVE	$0.50
		TOTAL	**$ 1,857.25**

Source: DOTD

Appendix C: Rail Freight Project Listing

Table C-1: Short-Range Individual Freight Rail Project Details

Project Name	Project Description	Project Benefits	Cost ($ millions)
New Orleans Rail Gateway	Initial construction of the project. Cost estimated 10 percent of project needs.	Provides for improved interchange between Class I railroads. Eliminates grade crossings and provides congestion mitigation.	$49.7 Source: Federal TIGER, CMAC, Rail Line Relocation, PNRS programs; state and local sources; railroad contributions.
Short Line Track Upgrades	Upgrades of short line trackage to handle 286,000-bound maximum carload weights. Cost estimated at 20 percent of statewide needs.	Provides for more efficient operations and 286,000-pound carload capability.	$41.0 Source: Federal TIGER program; railroad contributions. No state funds.
NOGC Rail Relocation	Relocation of New Orleans and Gulf Coast Railroad tracks south of New Orleans to access new port facilities. Cost estimated 15 percent of project needs.	Provides for multiple crossing closures and more efficient operations.	$40.5 Source: Federal TIGER, PNRS, Rail Line Relocation programs.
		Total Program	**$131.2**

Source: DOTD, 2015 State Rail Plan

Table C-2: Short-Range Rail Crossing Projects

Project Name	Project Description	Project Benefits	Cost ($)
BNSF (New Iberia) LA 14/ Center St. H.009843	Safety improvement to BNSF crossing, District 3, Iberia Parish	Enhances public safety.	$300,000
Cleveland Ave: NS RR Xing (Slidell) H.009152	Safety improvement at NS crossing, District 62, St. Tammany Parish	Enhances public safety.	$1,500,000
KCS (Deridder) Several RR Xing H.010088	Safety improvement at several crossings, District 7, Beauregard Parish	Enhances public safety.	$900,000
UP RR Xings (Grant) H.010669	Safety improvement at UP crossings, District 8, Grant Parish	Enhances public safety.	$700,000
UP Several RR Xings (Caddo) H.011028	Safety improvement at UP crossings, District 4, Caddo Parish	Enhances public safety.	$1,200,000
NS Several RR Xings (Plaque & St. Bern) H.011103	Safety improvement at NS crossings, District 2, Plaquemines & St. Bernard Parishes	Enhances public safety.	$200,000
US 61: IC RR Xing (Baton Rouge) H.011109	Safety improvement at IC (CP) crossing, District 61, East Baton Rouge	Enhances public safety.	$500,000
LA 1064: IC RR Xing (Tangipahoa) H.011113	Safety improvement at IC (CP) crossing, District 62, Tangipahoa Parish	Enhances public safety.	$200,000
US 425: UP RR Xing (Mer Rouge) H.011124	Safety improvement at UP crossing, District 5, Morehouse Parish	Enhances public safety.	$100,000
ALM Several RR Xings (Ouach & Morehouse) H.011144	Safety improvement at ALM crossing, District 5, Morehouse and Ouachita Parishes	Enhances public safety.	$200,000
Riverton Camp Rd: UP RR Xing (Caldwell) H.011188	Safety improvement at UP crossing, District 58, Caldwell Parish	Enhances public safety.	$300,00

Table C-2 Continued

Project Name	Project Description	Project Benefits	Cost ($)
LA 1029: IC RR Xing (Walker) H.011129	Safety improvement at IC (CP) crossing, District 62, Livingston Parish	Enhances public safety.	$200,000
LA 107: KCS RR Xing (Mansura) H.011229	Safety improvement at KCS crossing, District 8, Avoyelles Parish	Enhances public safety.	$100,000
BNSF (New Iberia) Jeff. Terrace Blvd. H.009868	Safety improvement at BNSF crossing, District 3, Iberia Parish	Enhances public safety.	$400,000
BNSF (Crowley) Several Crossings H.010073	Safety improvement at BNSF crossings, District 3, Acadia Parish	Enhances public safety.	$1,200,000
RT 207 (Central Dr): BNSF RR Xing (Iberia) H.010614	Safety improvement at BNSF crossing, District 3, Iberia Parish	Enhances public safety.	$100,000
Deare Street: BNSF RR Xing (New Iberia) H.010666	Safety improvement at BNSF crossing, District 3, Iberia Parish	Enhances public safety.	$500,000
BNSF (Cade) LA 92 H.009847	Safety improvement at BNSF crossing, District 3, St. Martin Parish	Enhances public safety.	$300,000
UP (Opelousas) Several RR Xings H.010090	Safety improvement at UP crossing, District 3, St. Landry Parish	Enhances public safety.	$1,500,000
LA 54: IC RR Xing (Garyville) H.010693	Safety improvement at IC (CP) crossing, District 62, St. John Baptist Parish	Enhances public safety.	$100,000
LA 158: KCS RR Xing (Grant) H.011119	Safety improvement at KCS crossing, District 8, Grant Parish	Enhances public safety.	$100,000
LA 14: LDRR Xing (New Iberia) H.011127	Safety improvement at LDRR crossing, District 3, Iberia Parish	Enhances public safety.	$500,000
LA 50: KCS RR Xing (St. Rose) H.011132	Safety improvement at KCS crossing, District 2, St. Charles Parish	Enhances public safety.	$100,000
		Total Program	**$11.2M**

Source: DOTD, 2015 State Rail Plan

Table C-3: Short-Range Grade Separation Projects

Project Name	Project Description	Project Benefits	Cost ($millions)
LA 1 RR Bridge @ Dow H.009288	Phase 5 (Final Plans), FY 13-14	Eliminates crossing exposure and thus enhances public safety.	$1.5
LA 3168: New Bridge @ BNSF – US 90 H.009520	Phase 2 (Env.), FY 13-14; Phase 5 (Preliminary Plans), FY 14-15; Phase 5 (Final Plans), Phase 4 (Utilities), Phase 3 (R/W), FY 15-16	Eliminates crossing exposure and thus enhances public safety.	$6.6
Gramercy Bridge Approaches H.002960	Phase 5 (Preliminary Plans), FY 13-14; Phase 5 (Final Plans), FY 14-15	Eliminates crossing exposure and thus enhances public safety.	$2.1
LA 397: New Br. @ I-10 & UPRR (Calcasieu) H.009521	Phase 2 (Env.), FY 13-14; Phase 5 (Prelim Plans), FY15-16; Phase 5 (Final Plans), Phase 4 (Utilities), Phase 3 (R/W), FY 16-17	Eliminates crossing exposure and thus enhances public safety.	$9.35
LA 3105: Underpass @ KCS S OF I-20 (Bossier) H.009522	Phase 2 (Env.), FY 14-15; Phase 5 (Prelim Plans), FY16-17; Phase 5 (Final Plans), Phase 4 (Utilities), Phase 3 (R/W), FY 17-18	Eliminates crossing exposure and thus enhances public safety.	$17.15

Table C-3 Continued

Project Name	Project Description	Project Benefits	Cost ($millions)
BNSF (New Iberia) H.006381	Phase 2 (Env.), FY 14-15	Eliminates crossing exposure and thus enhances public safety.	$0.5
		Total Program	**$37.2**

Source: DOTD, 2015 State Rail Plan. Note: Sources of funding include state and federal funds

Table C-4: Long-Range Freight Projects

Project Name	Project Description	Project Benefits	Cost ($million)
New Orleans Rail Gateway	Full construction of the project. Cost estimated 90 percent of project needs.	Provides for improved interchange between Class I railroads. Eliminates grade crossings and provides congestion mitigation.	$447.1
Short Line Track Upgrades	Upgrades of short line trackage to handle 286,000-bound maximum carload weights. Cost estimated at 80 percent of statewide needs.	Provides for more efficient operations and 286,000-pound carload capability.	$164.0
NOGC Rail Relocation	Relocation of New Orleans and Gulf Coast Railroad tracks south of New Orleans to access new port facilities. Cost estimated at 85 percent of project needs.	Provides for multiple crossing closures and more efficient operations.	$229.5
LAS Road Closures	Working with DOTD on road closures.	Enhances public safety.	$25.0
AKDN Road Closures, Crossing Safety Improvement	Closing of multiple road crossing within short distances on the railroad and placement of highway stop signs on state roads	Enhances public safety.	$1.5
NOPB Road Closures	Working with DOTD on road closures.	Enhances public safety.	$20.0
Port Rail Link Road Closures, Crossing Safety Improvements	Working with DOTD on road closures and upgrade crossing warning signals.	Enhances public safety.	$5.0
		Total Program	**$892.1**

Source: DOTD, 2014 State Rail Plan. Note: the funding sources have not been determined

Table C-5: Long-Range Rail Grade Separation Projects

Project Name	Project Description	Project Benefits	Cost ($million)
LA 1 RR Bridge @ Dow H.009288	Phase 6 (Letting), FY 18-19	Eliminates crossing exposure and thus enhances public safety.	$40.0
BNSF (New Iberia) H.006381	Phase 5 (Prelim Plans), FY18-19; Phase 5 (Final Plans), Phase 4 (Utilities), Phase 3 (R/W), FY 19-20	Eliminates crossing exposure and thus enhances public safety.	$6.1
KCS (West Monroe) H.001547	Phase 2 (Env.), FY 19-20; Phase 5 (Prelim Plans), FY20-21; Phase 5 (Final Plans), Phase 4 (Utilities), Phase 3 (R/W), FY 21-22	Eliminates crossing exposure and thus enhances public safety.	$6.6

Table C-5 Continued

Project Name	Project Description	Project Benefits	Cost ($million)
Gramercy Bridge Approaches H.002960	Phase 6 (Letting), FY 20-21	Eliminates crossing exposure and thus enhances public safety.	$20.0
		Total Program	**$72.7**

Source: DOTD, 2015 State Rail Plan. Note: Source of funding includes state and federal funds.

Appendix D: Ports and Waterways Project Listing

Table D-1: Port Needs

Port	Freight Tier	Project	Issue	Cost ($millions)	Project Source
Port of New Orleans	1	Napoleon Avenue Container Terminal Expansion Phases II & III	Anticipated congestion	$500	Port Survey/ Megaproject
Port of New Orleans	1	Almonaster Bridge construction	Port access	$65	Port Survey
Port of New Orleans	1	Cruise terminal expansion	Port expansion	$32	
Port of South Louisiana	1	Rail access to KCS rail line, heavy cargo warehouse, access road	Need for improved connectivity, expected capacity increases	$20	Port Survey
Port of South Louisiana	1	Gantry cranes	Expected increase in cargo	$12	Port Survey
Port of South Louisiana	1	Improve LA 637/W. 10th street	Expected increase in truck traffic (137 single-axle trucks per day)		Port Survey
Port of Vermilion	3	Bank stabilization, bulkheading, road and bridge access, Bendway straightening	Port expansion		Port Survey
Port of Delcambre	N/A	Rail spur to port	Port access		Port Survey
Port of Delcambre	N/A	Water channel maintenance dredging and deepening	Channel/basin		Port Survey
West Calcasieu Port	N/A	Maintenance dredging and expansion of barge basin		$1.4	Port Survey
West Calcasieu Port	N/A	New waterfront infrastructure expansion		$1.3	Port Survey
Caddo Bossier Parishes Port Commission	N/A	KCS rail connection to port			Port Survey
Port Manchac	N/A	Bulkhead & dock improvements	Need for more rail-to-barge trans-loading operations for liquid-bulk (crude) and containerized cargo storage		Port Survey
Port Manchac	N/A	Additional rail track	Maximize barge loading capabilities		Port Survey
Port Manchac	N/A	Channel dredging	Maximize barge loading capabilities		Port Survey
Port of Pointe Coupee	N/A	New conveyor system		$0.35	Port Survey

Table D-1 Continued

Port	Freight Tier	Project	Issue	Cost ($millions)	Project Source
Port of Pointe Coupee	N/A	Additional grain storage facilities		$0.5	Port Survey
Port of Pointe Coupee	N/A	Dredging		$0.5	Port Survey
Port of Pointe Coupee	N/A	Upgrade on-port roadway system			Port Survey
Port of Morgan City	N/A	Boat shed for security vessel		$0.14	Port Survey
Port of Morgan City	N/A	Mooring system for PMI barges and potential clients		$0.1	Port Survey
Port of Morgan City	N/A	Governmental operations and emergency center building		$11	Port Survey
Port of Morgan City	N/A	2 NOAA Stations for navigation		$.5	Port Survey
Madison Parish Port	N/A	Four lane road to port from Highway 65		$2.0	Port Survey
Madison Parish Port	N/A	Upgrade water tower	Fire protection	$0.4	Port Survey
Madison Parish Port	N/A	Repair/upgrade dock in river		$2.5	Port Survey
Port of Alexandria	N/A	Roadway expansion	Cool Planet tenant		Port Survey
West Cameron Port Commission	N/A	Bridge to Monkey Island/Davis Road extension			Port Survey
Greater Ouachita Port	N/A	New operations center			Port Survey
Port of Lake Providence	N/A	40-acre expansion	Expansion	$8	Port Survey
Plaquemines Port Harbor & Terminal District	1	Rail extension from end of line to port property	Access		Port Survey
Plaquemines Port Harbor & Terminal District	1	Relocate rail out of Belle Chasse/Gretna to the Peters Road bypass corridor	Access		Port Survey
Plaquemines Port Harbor & Terminal District	1	Relocation of Hwy, 23 through current port site	Access		Port Survey
Natchitoches Parish Port	N/A	New rail spur, additional storage facilities	New business, land expansion		Port Survey
Port Fourchon	2	LA1 Elevated Highway	Access	$300	Port Survey
Port Fourchon	2	Slip C Bulkhead Construction	Expansion	$15	Port Survey
Port Fourchon	2	Slip D Dredging	Expansion	$6	Port Survey
Port Fourchon	2	Slip D Bulkhead Construction	Expansion	$52	Port Survey
Port Fourchon	2	New Fourchon Bridge	Access	$12	Port Survey
Port of Mermentau	N/A	Widening of a slip	Purchased property to widen slip	$1.4	Port Survey

Source: Port Survey conducted December 2014, 2015 Louisiana Statewide Transportation Plan

Table D-2: Waterways Needs Summary for 2012 to 2042

Identification	Tier	Preservation Needs		Expansion Needs	
		Description	Cost ($M)	Description	Cost ($millions)
Lower Mississippi River (Baton Rouge to the Gulf)	1	Annual maintenance dredging	$129	Channel deepening	$275
		O&M for Port Allen Lock	N/A	Old River Lock upgrade	$573
		Baptiste Collette, Tiger Pass	$14	Baptiste Collette channel deepening	$35
Upper Mississippi River (Baton Rouge to Lake Providence)	1	Maintenance dredging	$8		
Atchafalaya River	2	Maintenance dredging	$20	Re-alignment to Crewboat Cut	N/A
				Simmesport Bridge improvements	N/A
Red River	3	Maintenance dredging	$5.7	Channel deepening	N/A
		Maintain lock operations – do not reduce schedule	$5.8		
Ouachita River	N/A	Maintenance dredging	$1.5	Alignment	N/A
		Maintain lock operations – do not reduce schedule	$1.8		
Calcasieu River	1 and 3	Maintenance dredging	$82.4	Channel widening	N/A
		Maintain lockage schedule at the saltwater barrier	N/A	Improved anchorage areas	N/A
		Approval of DMMP	N/A		
Mermentau River	N/A	Maintenance dredging	$1.2	River mouth deepening	N/A
Vermilion River	N/A	Maintenance dredging from river (Teche to Vermilion)	$0.26	Berwick Lock improvement	$573
GIWW (and alternate route)	1	Maintenance dredging	$5.5	Calcasieu Lock improvement	$573
		Maintain lock operations – do not reduce schedule	N/A	Bayou Boeuf Lock Improvement	$573
				Leland Bowman Lock improvement	$573
				Algiers Lock improvement	$573
				Harvey Canal Lock improvement	$573
				Bayou Sorrel Lock replacement	$573
				IHNC Lock	$1,300
Gulf Coast	1	Maintenance dredging	$14.3	Channel deepening – Gulf Coast waterways (5 major – excludes Vermilion and Mermentau)	$458
		Preservation Needs Total	**$290.3**	**Expansion Needs Total**	**$6,652**

Source: 2015 Louisiana Statewide Transportation Plan – Needs Assessment Technical Memorandum
Notes: 1) Dollar amount for dredging maintenance was provided by New Orleans and Vicksburg Districts, USACE. 2) Other costs from various sources (MR deepening-letter from COL Fleming to DOTD). 3) Lock replacement costs based on Congressional approval in 1998 for costs to replace the IHNC. 4) Deepening of Gulf coast channels estimated at $91M each (while a need for both waterways and ports, costs are shown only for waterways). N/A – Cost estimates were not available.

Appendix E: Air Cargo Project Listing

Table E: Aviation Freight Related Project Needs

Airport	Tier	Project Need	Cost ($)
Shreveport	1	Extend runway length to 6,500 feet	$3,806,000
Lafayette	2	Increase hangar space	$1,590,000
Baton Rouge	3	Increase hangar space	$3,180,000
Alexandria	3	Increase hangar space	$636,000
Lake Charles	3	Increase hangar space	$1,431,000
		Total Aviation Project Needs	**$10,643,000**

Source: 2015 Louisiana Aviation System Plan

Appendix F: Acknowledgements

Louisiana Department of Transportation and Development (DOTD) Secretary Shawn D. Wilson, former Secretary Sherri H. LeBas, and Deputy Secretary Eric Kalivoda gratefully acknowledge the contribution of DOTD staff, Freight Advisory Committee members, planning partners, and the consultant team in the development of the 2017 Louisiana Freight Mobility Plan.

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