4. Transportation in Louisiana

Louisiana's transportation system touches the lives of nearly every resident and visitor daily, and the DOTD is responsible for maintaining the safety and mobility of a significant component of that system – the state system. The *Transportation in Louisiana* chapter of the Plan summarizes the key facts and issues concerning the system, focusing on the state-maintained component. This chapter is a foundation for addressing transportation needs through policy recommendations, investment strategies, and specific projects.

4.1 Louisiana Transportation System at a Glance

Louisiana has an interconnected multimodal transportation system that uses roadways, waterways, rail, and air to transport people and goods to, from, and through the state (**Table 4-1**). Planning, constructing, providing, and maintaining this system involves many different players with differing roles.

Table 4-1: Transportation in Louisiana at a Glance (as of January 2015)

Component	Key Statistic
Highways	• 61,300 miles of public roads • 16,660 miles (39,200 lane miles) maintained by DOTD • Louisiana is the 11th largest system in nation under state control • 12,900 bridges (highway structures) • 21st highest bridge count in nation/third highest in deck area • 60 percent of bridges are owned and maintained by DOTD • 39.5 billion annual VMT (entire system) • Four traffic management centers (TMC) • Approximately 100 dynamic message signs (DMS) • Approximately 350 closed circuit television cameras (CCTV)
Trucking	• 13 weigh station and scales facilities (10 are at five locations in pairs) • 11 rest areas • Accounts for 58 percent of the tonnage moved and approximately 46 percent of the freight value moved in the state (excluding pipeline movements)
Ports and Waterways	• Navigable waterway network of over 2,800 miles • Eight deep-draft public ports • 17 shallow-draft inland ports • 15 coastal ports • First in tonnage port in the U.S. (South Louisiana) • Five of the top 15 tonnage ports in the U.S. • 514 million short tons of cargo handled annually at ports
Freight Rail	• 3,600 route miles operated • Six Class I railroads • 15 local, switching, terminal railroads

Component	Key Statistic
	• 121 million tons of freight handled annually
Aviation	• Seven commercial service airports • 61 general aviation airports • 5 million passenger enplanements annually at commercial airports
Surface Passenger	• Elderly and Persons with Disabilities Transportation – provided in 49 of 64 parishes • Rural Public Transportation – provided in 34 of 64 parishes • Urban and Small Urban Transit Systems – services provided within 12 parishes • Intercity Bus – Greyhound and Megabus • Passenger Rail – three Amtrak trains and a total of seven train stations • 33 million rides annually

4.2 Highlights

Large State Operated System

- Louisiana has the 11th largest highway system in the nation under state control, and a 30th national ranking in total miles of public roadways.

System Demand

- Overall, the highway system has expanded by less than 1 percent in the last decade, but demand on the system has grown by 11 percent. Rural VMT declined 14 percent in the last decade in contrast to a 41 percent increase in urban VMT.

Transportation Infrastructure Needs

- Total transportation infrastructure needs by 2044, across all modes, are estimated to be $55.9 billion.

4.3 Highways

The DOTD is the owner-operator of the State's highway and bridge system, which provides access and mobility for a significant proportion of total regional and interstate passenger and freight transportation travel. Louisiana separates state-owned roadways into four classes: Interstate Highway System (IHS), Non-Interstate National Highway System (NHS), Statewide Highway System (SHS), and Regional Highway System (RHS). **Table 4-2** shows the total mileage analyzed within each class.

Table 4-2: Louisiana Highway System Centerline 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 Mileage		**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 ratings.

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. The RHS provides access and mobility for local travel.

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 most of the local roads. Even so, 2-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.

The transportation public telephone survey conducted in August 2012 as part of the Plan revealed that almost all Louisianians believe that maintaining transportation assets is a top priority. At the same time only 28 percent agree that the system is in good condition.[3]

4.3.1 Pavements

The DOTD monitors pavement condition constantly and evaluates current and future needs using a combination of pavement engineering input and sophisticated infrastructure management tools. The DOTD directs capital investments to minimize long-term costs by instituting an early-intervention strategy (also known as life cycle cost analysis). The strategy must be balanced against fiscal constraints and competing modal and functional needs.

Pavement Performance Objectives

The DOTD strives to maintain the state system's pavement in its current or better condition. This focus helps to maximize roadway pavement life within the available resources. To achieve this objective, DOTD'S 2015 Asset Management Plan has established performance goals for each road class, as follows:

- 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

[3] *The survey did not distinguish between the state-owned transportation system and other elements.*

The ratings are a composite score based on an assessment of several condition factors. As pavement condition is categorized into reporting segments of *very poor* to *very good*, the Department seeks to alleviate *poor* or *very poor* pavement conditions. Thus the target is to have road sections in the *fair*, *good*, or *very good* pavement condition categories.

Pavement Existing Conditions

The roadway conditions for the base year of 2013 – for each system element as a percentage of that system's mileage – are shown in **Table 4-3**. The rating categories range from v*ery 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 in v*ery good* condition. Only 1.7 percent of the Louisiana system is rated as being in *very poor* condition.

Table 4-3: 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

4.3.2 Bridges

As of January 2015, Louisiana has 12,900 bridges within the state or at the border with neighboring states. This is the 21st highest bridge count in the U.S. 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 approximately 3 percent. Of the 7,963 state-owned structures, 69 percent are in rural areas and 31 percent in urban areas.

Bridge Performance Objectives

The "sufficiency rating" for bridges is an estimate of the quality of a 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.

DOTD's 2015 Asset Management Plan has set the following performance outcomes for bridge condition:

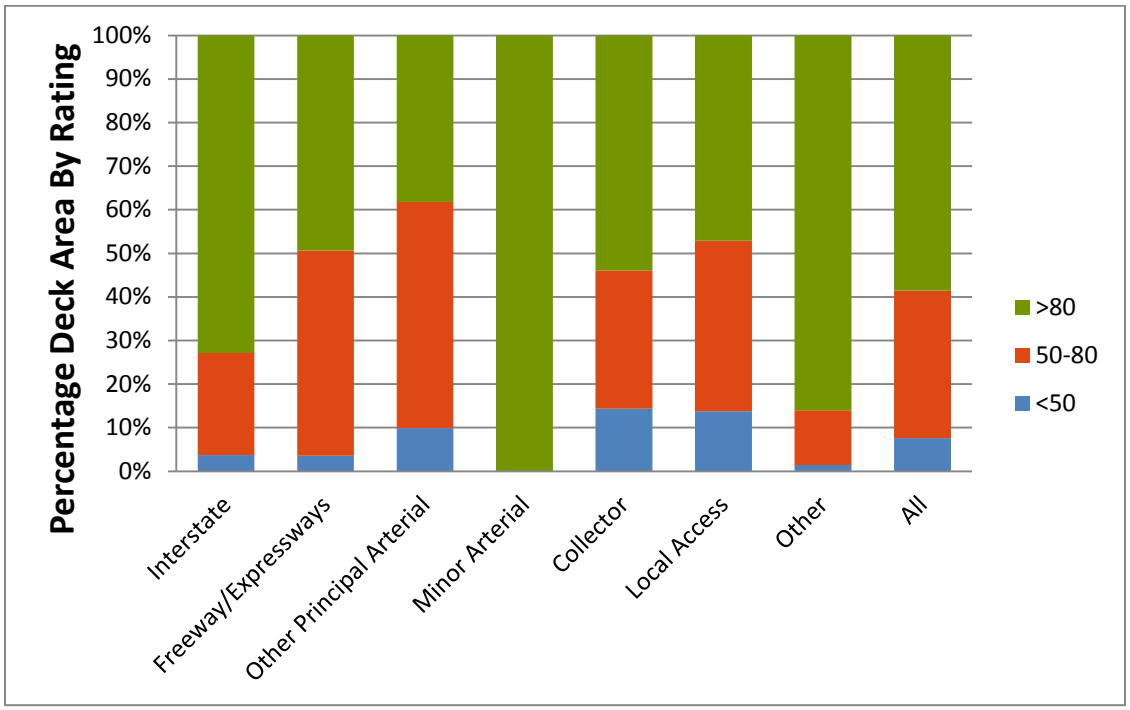
- No more than 10 percent of total deck area on the state system ("on-system") in structurally deficient condition

Bridge Existing Conditions

Approximately 59 percent of DOTD-maintained bridges have a sufficiency rating of 80 or better, and 34 percent have a rating of between 50 and 80; bridges in this rating range are eligible for federal funds[4] to preserve and/or rehabilitate bridges. The remaining 8 percent of DOTD bridges are below a 50 sufficiency rating and are candidates for replacement.

Figure 4-1 presents the distribution of bridge sufficiency scores by functional classification. Bridges on the interstate and freeway system (on-system), which accommodate a high proportion of the State's total travel and a high percentage of heavy-duty trucks, have the highest average structural condition ratings and the lowest levels of structurally deficient deck area. Currently, a majority of bridges are rated in *good* condition. Only collector and local access roads (much of which is off-system) have structurally-deficient deck areas exceeding 10 percent of the total deck area.

Figure 4-1: Structural Bridge Condition Ratings by Deck Area and Functional Classification (On-and Off-System), 2014



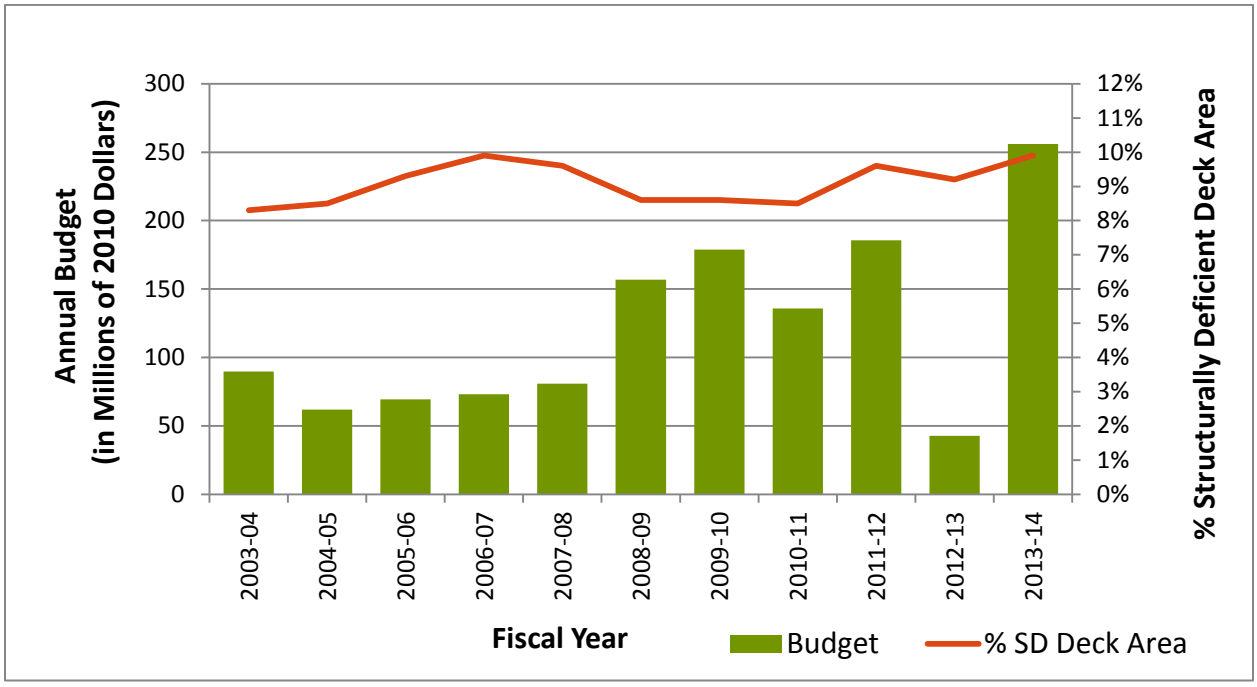
Source: DOTD

Over the past decade, major storm events in Louisiana have impacted bridges. The DOTD undertook a massive reconstruction effort to restore the bridges and culverts that were damaged or destroyed, most notably by Hurricane Katrina and Hurricane Rita, in 2005. Over the past 10 years, the percentage of total deck area corresponding to bridges rated structurally deficient has remained under 10 percent.

[4] *With the passage of the federal highway legislation MAP-21 in 2012, the eligibility criteria changed; however, these bridge rating statistics remain a valid way to describe the quality of bridge conditions.*

As shown in **Figure 4-2,** 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 $256.0 million (in 2010 dollars) 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 4-2: Trends in Louisiana State System Bridge Condition and Spending (State System, 2010 Dollars)



Source: DOTD

4.3.3 Intelligent Transportation Systems/Operations/Motorist Services

As demands on capital budgets have increased, the importance of improving the operating efficiency of the existing transportation infrastructure – achieving similar benefits with less cost – has been actively pursued by all transportation agencies. Operational improvements have become increasingly relevant in addressing long-term needs, especially in locations where adding capacity is not feasible. Intelligent Transportation Systems (ITS) typically involves moderate scale operational improvements that can have compounding benefits on transportation system efficiency. ITS projects use technology and communications to guide traveler decisions, smooth traffic flows, and improve the reliability of the transportation system. Most ITS projects are relatively moderate in cost and are often included in larger capital projects. Larger scale ITS deployments may have excellent benefit to cost ratios when compared to other capital projects, but they can still cost millions of dollars. Longer-term ITS possibilities include full integration of systems, legislation involving operational changes (e.g., quick incident/accident clearance laws), potential tolling applications, and an increased commitment to system operations.

ITS is not new to Louisiana. Traffic management centers (TMCs) have existed in New Orleans and Baton Rouge for over a decade. Dynamic message signs (DMSs), closed circuit TV (CCTV) cameras, and even corridor signal operations were in use prior to the TMCs and are now commonplace. Related operational programs also are not new. Signals have achieved greater levels of coordination and integration over the years. Lastly, coordination with emergency services, especially coordination with accident response teams, has continued to improve.

ITS, Operations and Motorist Services Performance Objectives

In its Strategic Management Plan, DOTD established an objective of maintaining 90 percent of the NHS and the IHS in uncongested conditions. The DOTD has also established objectives for developing emergency management programs and for maintenance, operations and inspection activities to improve safety.

Traffic Management Centers

DOTD operates four TMCs across the state, with the Baton Rouge TMC co-located with the statewide center. A TMC is defined as a staffed location with computer and communications equipment that work with the ITS field devices in the region. The statewide and New Orleans TMCs operate 24/7 and can assume control of the other centers when they are not staffed.

The only TMC that manages operations at the local level is the Baton Rouge Advanced Traffic Management – Emergency Operations Center (ATM-EOC). The ATM-EOC is a facility owned by the Parish that manages and coordinates traffic signal operations. The DOTD has a staffing function at this center. Additionally, multiple agencies reside at the ATM-OEC, including 911, fire, police, and the sheriff. The original intent was to focus on the co-location of services and agencies to help in incident and emergency response. The center lacks system integration, with several different computer systems running different functions, including dispatching functions.

ITS Field Devices

There are three primary types of ITS field devices currently installed statewide:

- CCTV
- DMS
- Vehicle detection systems

Additional systems include weigh in motion (WIM), highway advisory radio (HAR), remote weather information systems (RWIS), tolling, transit, ramp meters, portable changeable message signs, and advanced traffic signal systems.

Closed Circuit Television

DOTD currently has 350+ CCTV cameras located primarily on urban freeways throughout the state. These include a combination of fixed cameras and tilt/pan/zoom cameras. Cameras are utilized primarily for monitoring of traffic flow and verification of incidents.

Dynamic Message Signs

There are about 100 DMSs located throughout the state. Approximately one-third of them are in the greater New Orleans and North Shore area, while another third are split between Baton Rouge and Shreveport. The remaining third are spread between other urban areas and statewide (rural sections).

Vehicle Detection Systems

Vehicle detection devices are primarily radar vehicle detectors supplemented with some video detection. Statewide, approximately 150 detection devices are installed on interstates to monitor traffic conditions. This inventory does not include detection devices associated with traffic signal actuation.

The remaining systems are used locally throughout the state. They are typically installed to address more local or regional concerns, rather than blanket applications of existing technologies. For the short term, many systems are operated independently or integrated with just the local TMC.

Communication Networks

Communication is critical to all ITS systems and to general operations. Whether wireless or wired, field devices must interact with some local or central control. The DOTD ITS Strategic Business Plan summarizes the communications infrastructure as a mixture of services. This includes both owned and leased systems, wireless, and fiber. In almost all cases, video is the driving force behind the design and business model decisions for communications. The DOTD communications network has generally been built coincident with the deployment of devices and systems. The preferred means of communication is by fiber optic cable, although many applications require the use of wireless.

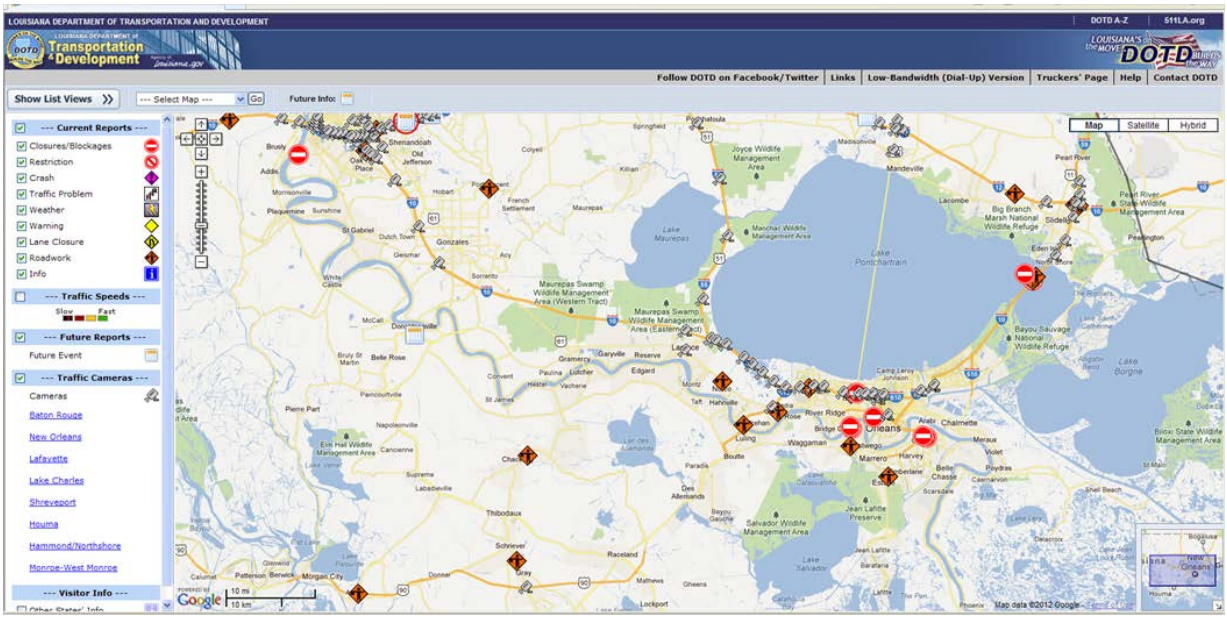
A related effort within Louisiana is the Louisiana Optical Network Initiative (LONI). LONI is a statewide fiber optic network which connects the universities within Louisiana and other state institutions to each other. Portions of LONI use borrowed fiber from DOTD, and DOTD does use LONI in some circumstances to help complete connections to TMCs.

Pre-Trip and Mobile Traveler Information

In most ITS documentation for DOTD, traveler information includes DMS and HAR. These items can be addressed both under traveler information and traffic management. For the purposes of the Plan, DMS and HAR are best considered as field devices for traffic management, while traveler information addresses those items that are more personalized, such as web services and mobile device applications.

The majority of information available at the various TMCs is available on the DOTD 511 website (www.511la.org) (**Figure 4-3**). This includes the ability to highly personalize the view, as well as the ability to access other specialty information lists, such as the trucker's page. Information is also available on Facebook and Twitter and in mobile applications.

Figure 4-3: DOTD 511 Website



Other Operations and Services

Other important services within Louisiana include:

- **Motorist Assistance Patrol** – The motorist aid program for DOTD exists on the primary interstates within the larger urban areas of Louisiana, including portions of Baton Rouge, Lake Charles, Shreveport-Bossier City, and New Orleans. The MAP vehicles provide basic mechanical, health and safety, and incident management services.

- **Corridor Traffic Signal Coordination** – Generally, no statewide or major regional corridor signal coordination integration systems (something much larger than a closed loop signal system) exist in Louisiana. The vast majority of timing and integration is handled through the regional offices and outside of the ITS section of DOTD.

- **Hurricane Evacuation** – During hurricanes, the State's resources are generally coordinated through the Governor's Office of Homeland Security and Emergency Preparedness. As mentioned with the TMCs, the various emergency operations centers have established relationships with DOTD and coordinate the use of resources to help manage evacuations and response.

- **Tolling** – Tolling is still limited in Louisiana, but electronic tolling is available through GeauxPass. This allows for traditional prepaid tolling but may be converted to open road tolling in the future.

Freight and Port Operations – In recent years, much of the technology deployed in the operations of freight and ports has been directed at increasing security and safety, and as such generally not accomplished in coordination with state DOTs. The core Commercial Vehicle Information Systems and Networks (CVISN) system have been implemented within Louisiana. Much of the CVISN involves non-

transportation agencies for purposes of taxing, safety, etc. Louisiana is also a PrePass state; the system is implemented at several weigh stations. The PrePass system allows commercial vehicle operators to obtain advance verification of their safety records and credentials and to demonstrate en route verification electronically, which eliminates the need to stop and present papers at a checkpoint.

4.3.4 Traffic Safety

Only one-half of Louisianians surveyed in the statewide household survey agree, either strongly or somewhat strongly, with the statement that roads and bridges are safe. In other words, roughly half do not always feel safe on the roadways.

Louisiana experiences higher crash rates than the nation as a whole; however, crash rate trends show a growing convergence with the national average. This indicates that, while more work must be done, actions to address safety issues – including capital investments that address spot safety issues, enforcement activities, and educational efforts – are producing a positive effect on traveler safety.

Safety Performance Objectives

Safety considerations are important in all of DOTD's planning, operations, and preservation activities. The Department regularly monitors accident information and evaluates the potential for traffic engineering or enforcement solutions to address specific safety issues. DOTD's Strategic Highway Safety Plan (SHSP) spells out policy and program initiatives to improve safety and to make progress towards the SHSP's long-term goal of eliminating highway fatalities. The 2019 DOTD Strategic Management Plan has established the following safety-related performance objectives:

- To reduce the total number of fatalities on Louisiana public roads by 6 percent each calendar year through 2030
- To achieve at least a 25 percent reduction in fatal and non-fatal crash rates at selected crash locations through the implementation of safety improvements each year

In 2011, DOTD completed a Strategic Highway Safety Plan (SHSP). The SHSP is a multidisciplinary, data-driven strategic plan, which includes a focus on reducing motor vehicle deaths and injuries through engineering, enforcement, education, and emergency response. The SHSP established short-term targets to achieve the following objectives in various program areas:

- Reduced system-wide fatalities, serious injuries and fatality rates
- Reduced fatalities rates in urban and rural areas
- Reduced unrestrained fatalities and increased seatbelt usage compliance
- Reduced alcohol-impaired fatalities
- Reduced speeding-related fatalities
- Reduced motorcycle fatalities and unhelmeted fatalities maintained at current levels;
- Reduced young driver fatalities
- Reduced pedestrian and bicycle fatalities
- Reduced highway-rail fatalities

The SHSP also established a long-term goal of reducing fatalities in each program or emphasis area by a minimum of 50 percent by 2030.

Table 4-4 presents statewide safety statistics that encompass both state and locally owned roadways. The SHSP notes, and the table below confirms, that crashes of all types have been steadily decreasing, consistent with national trends. According to crash data reports from Louisiana State University (LSU) and state crash records, during the 6-year period from 2007 to 2013, the number of fatal crashes per year fell from 900 to 651, an overall reduction of 27.7 percent from 2007 levels, or 5.5 percent on an annualized basis. The reductions in injury crashes and property damage only (PDO) crashes over the same period were 9.6 percent and 0.5 percent, respectively.

Table 4-4: Crash Types (All Roads)

Year	Fatal Crashes	Injury Crashes	PDO Crashes
2007	900	48,100	110,400
2008	822	46,600	110,300
2009	729	45,400	109,900
2010	643	42,500	104,600
2011	630	43,400	105,800
2012	654	44,600	108,000
2013	651	43,500	109,800

Source: Louisiana State University – Highway Safety Research Group, Louisiana Crash Data Reports, 2015

The SHSP identified the following factors or combination of factors as most influential in contributing to fatalities:

- Failure to buckle-up
- Speeding and aggressive driving
- Roadway departures (a non-intersection crash which occurs after a vehicle crosses an edge line or a center line, or otherwise leaves the traveled way)
- Drunk or impaired driving
- Young drivers

Recent statistics also show that while the number of accidents is decreasing, less progress is being made in preventing crashes caused by distracted driving than in preventing accidents by other causes, including alcohol or aggressive driving-related accidents. The SHSP's focus on prevention and education is designed to lower the number of fatalities and significant injuries resulting from major traffic accidents. Specific action plans exist for each of the emphasis areas.

While the number and rate of fatal crashes has dropped significantly in Louisiana, lack of seat belts and alcohol use remain significant contributing causes in these crashes.

Based on analysis of the data and other considerations, the SHSP adopted four emphasis areas for focusing attention, energy, and resources: 1) impaired driving; 2) occupant protection; 3) infrastructure and operations; and 4) crashes involving young drivers. While three of the four focus areas are behavioral emphasis areas, the infrastructure and operations emphasis areas are tied directly to DOTD's ability to effect change. Some needs identified by the Infrastructure and Operations Emphasis Area Action Plan and DOTD's highway safety team include:

- Program, design, and construct safety improvements on state and local roads through systemic safety analyses for roadway departures and intersections

- Adopt a DOTD policy to include safety on all pavement and bridge preservation projects
- Focus on safety improvements at locations with the highest potential for crash reduction
- Implement the DOTD's road safety assessments (RSA) policy by expanding the use of RSAs across all DOTD districts and implementing the recommendations
- Track and evaluate safety performance
- Improve data collection, data quality, data analysis, mapping, and reporting for all public roadways in an intersection database (this includes crash data, geometric features, traffic control, average daily traffic, etc.)

4.3.5 Mobility and Congestion

Louisianians rely on passenger vehicles for business and for personal reasons, travel moderate distances to their jobs, and have driven their vehicles less in recent years – reflecting national trends. As the population ages over the next 30 years, Louisiana can expect an increase in demand for shared or subsidized transportation services.

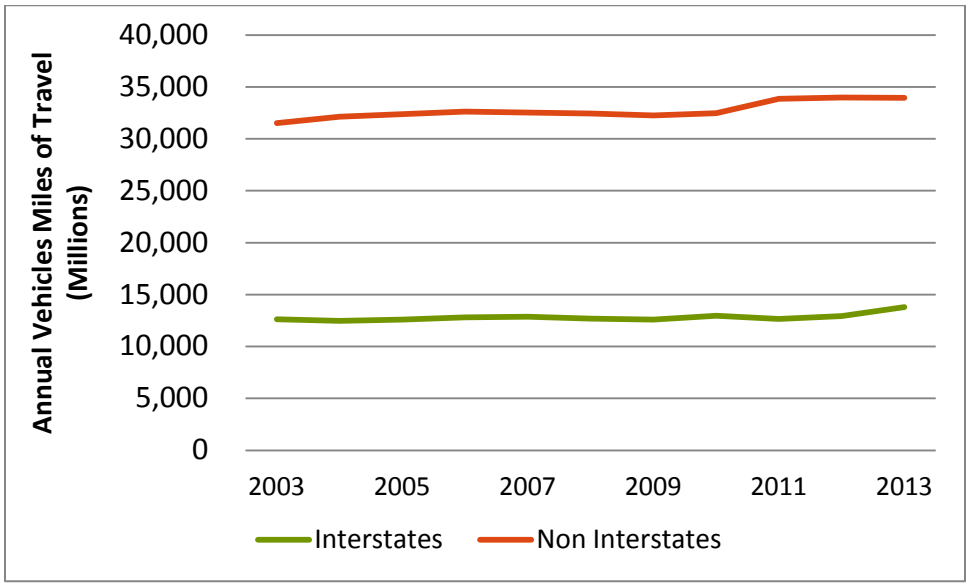
In addition to asset condition, system performance is a moderate concern among Louisianians, according to the statewide household survey conducted as part of the Plan. Seventeen percent of respondents identified "highway congestion" as a major transportation issue. Additionally, 36 percent of respondents listed "price of travel" as their major concern. Delays can directly increase the price of travel, as wasted time and fuel are consumed while traveling in congestion.

Highway Travel Demand

Travel on Louisiana's roads (including non-state maintained roads) grew at an annualized average rate of 0.79 percent per year during the 10-year period between 2003 and 2013. Travel decreased slightly between 2007 and 2009, partially because of the effects of the recession, but less so than in other states. Overall, travel has increased steadily since 2010. VMT on Louisiana's roads is shown in **Figure 4-4** below.

National trends indicate a slowing of the per-person demand for highway travel, due to the ability to substitute social media, online shopping, education, and other internet activities for travel, as well as an apparent generational shift in lifestyle preferences away from single occupant travel towards non-motorized travel. An additional potential factor is the ability, likely to be realized during the lifetime of the Plan, to automate car-sharing services. These factors – as well as the unknowns of economic performance, energy needs, etc. – lend a high degree of uncertainty to the forecasts for travel demand.

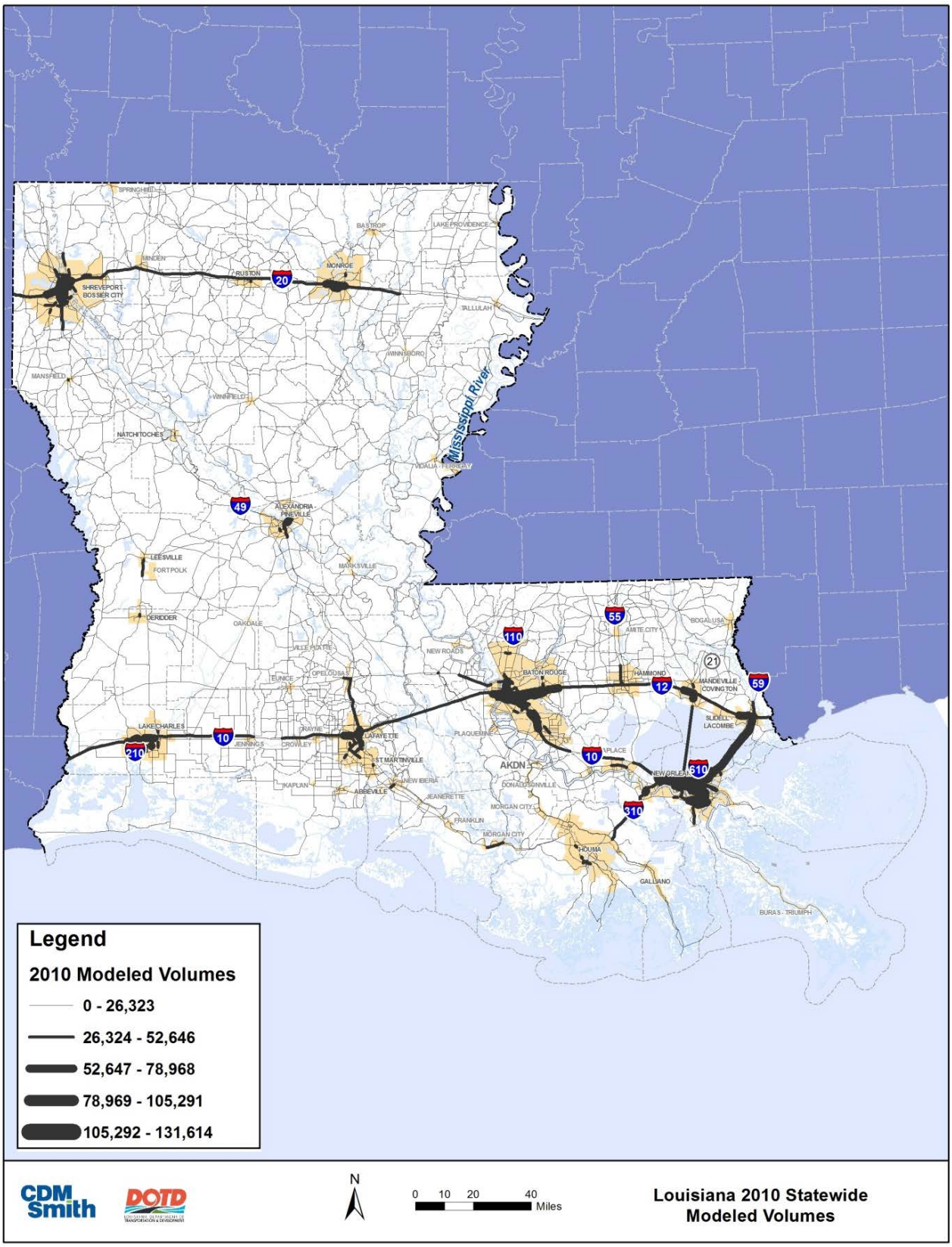
Figure 4-4: Vehicle Miles of Travel in Louisiana Roads, 2003 to 2013



Source: FHWA Highway Statistics

Intercity and regional passenger and freight movements rely heavily on the Interstate system. Interstate 10, I-12, and I-20 provide much of the east-west regional movement for vehicles, while I-49, I-55, and I-59 facilitate north-south movements. As shown in **Figure 4-5** below, Louisiana's metropolitan areas, where a significant amount of the State's economic output is generated, attract and generate the largest volume of traffic on Louisiana's roadway system.

Figure 4-5: Estimated 2010 Weekday Traffic Volumes on Louisiana Highways



Source: CDM Smith

The modes of travel used by Louisiana commuters in urban areas and for the state as a whole are shown in **Table 4-5**. Driving accounts for 90 percent (New Orleans) to 95 percent (Monroe) of travel for commuters in urbanized areas. Fewer than 10 percent of commuters travel by non-auto modes, including transit, and walk/bike, work at home, and other. However, within particular corridors and during the peak hours of commute travel, non-auto modes are essential for maintaining mobility and reducing congestion and are part of an interconnected, intermodal system of transportation that provides affordable travel choices.

Table 4-5: Journey to Work Transportation Mode by Metropolitan Statistical Area, 2013

Urban Area	Auto	Carpool	Transit	Walk/ Bike	Work at Home	Other
Alexandria	84%	10%	1%	2%	1%	2%
Baton Rouge	83%	10%	1%	2%	3%	1%
Houma-Bayou Cane-Thibodaux	80%	12%	0%	2%	2%	4%
Lafayette	84%	11%	0%	2%	2%	1%
Lake Charles	85%	10%	0%	2%	2%	1%
Monroe	87%	8%	1%	1%	2%	1%
New Orleans-Metairie-Kenner	78%	12%	3%	3%	3%	2%
Shreveport-Bossier City	85%	8%	1%	2%	2%	2%
All Louisiana	**83%**	**10%**	**1%**	**2%**	**2%**	**2%**

Source: 2013 Five-Year American Community Survey, U.S. Bureau of the Census

The distribution of commuting times in the same urban areas is shown in **Table 4-6**. Lake Charles and Monroe have the highest percentage of commutes less than 20 minutes in length, followed by Alexandria and Houma (53 percent). At the other end of the spectrum, 61 percent of commutes take longer than 20 minutes in Baton Rouge and 57 percent take longer than 20 minutes in New Orleans-Metairie-Kenner.

Table 4-6: Distribution of Commuting Times by Urban Area (Minutes), 2013

Urban Area	<10	10-19	20-29	30-44	45-59	>60
Alexandria	16%	37%	22%	15%	4%	6%
Baton Rouge	10%	29%	23%	21%	9%	8%
Houma-Bayou Cane-Thibodaux	19%	34%	15%	17%	7%	8%
Lafayette	16%	35%	20%	17%	5%	7%
Lake Charles	17%	41%	21%	13%	3%	5%
Monroe	16%	42%	18%	15%	4%	5%
New Orleans-Metairie-Kenner	11%	32%	22%	20%	7%	8%
Shreveport-Bossier City	13%	38%	26%	15%	4%	4%
All Louisiana	**15%**	**33%**	**19%**	**18%**	**7%**	**8%**

Source: 2013 Five-Year American Community Survey, U.S. Bureau of the Census

Mobility and Congestion Performance Objectives

The DOTD has established maximum thresholds for managing congestion on the state system's higher capacity roads. These thresholds are (from the 2019 Strategic Management Plan):

- Maintain 90 percent or greater of the IHS in uncongested conditions
- Maintain 90 percent or greater of the NHS in uncongested conditions

Table 4-7 presents the extent of congestion on Louisiana's roads, as estimated by the statewide travel demand model. An estimated 16 percent of travel (VMT) on Louisiana's roads experiences recurring congestion. The delay estimates suggest that more travel on freeways and other principal arterials experiences congestion than on interstates and other roads. However, the duration and severity of congestion is generally worse on the interstate system.

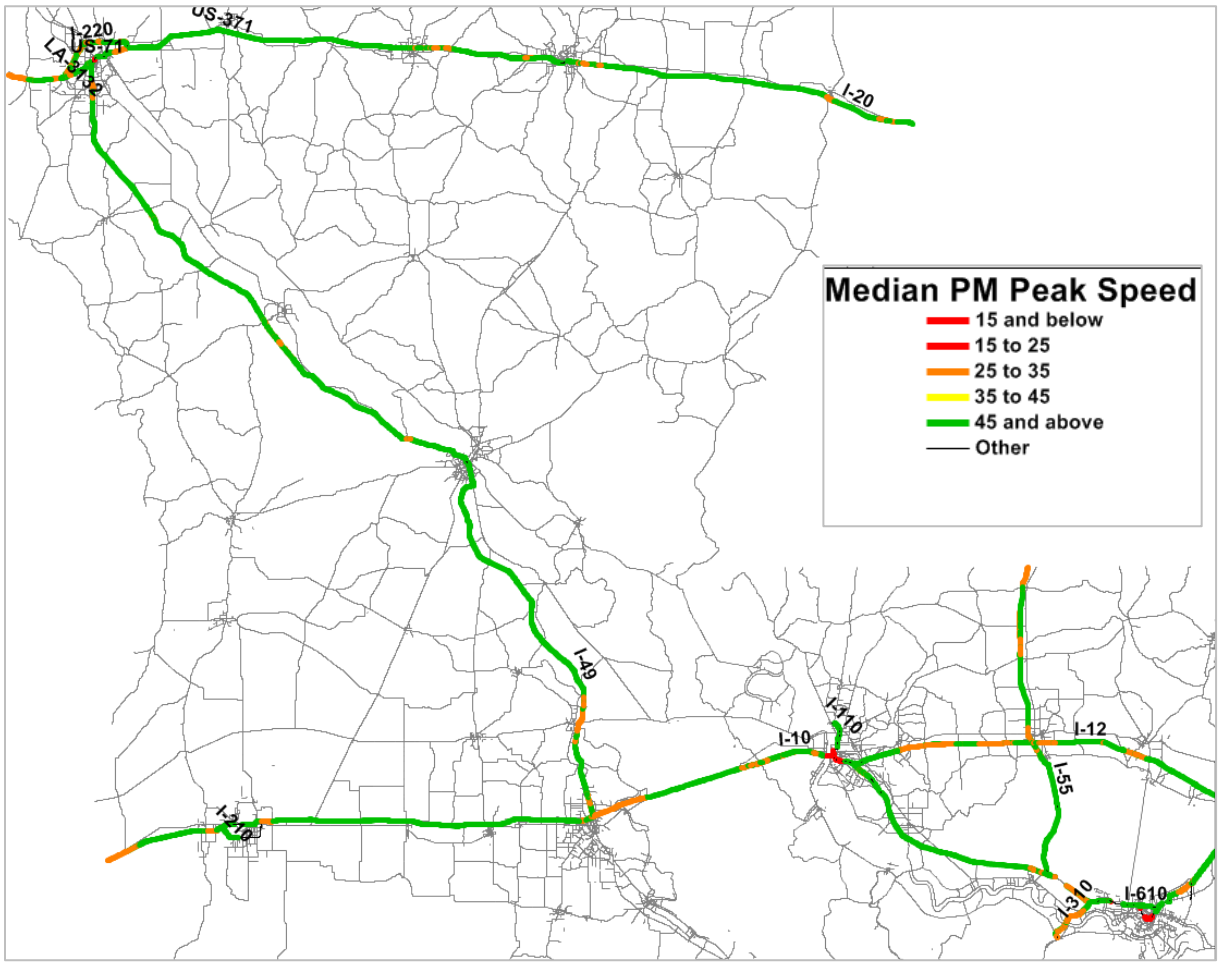
Table 4-7: Estimated 2010 Congestion by Roadway Type

Roadway	Weekday VMT (millions)	Percentage of VMT in Congestion	Percentage of miles in Congestion
Interstates	36.8	17.8%	8.3%
Freeways and Other Principal Arterials	32.9	21.7%	12.6%
Minor Arterials, Collectors and Local Roads	38.6	9.4%	1.1%
All Roads	108.3	16.0%	2.9%

Source: CDM Smith

Travelers in Louisiana's metropolitan areas encounter recurring congestion, especially in New Orleans and parts of Baton Rouge. **Figure 4-6** presents an estimate of roadway traffic volumes compared to roadway capacity. Volumes exceeding capacities are shown in red. When volumes exceed capacity, traffic delays result, often with traffic queues and backups.

Figure 4-6: Estimated 2010 Volume to Capacity Ratios on Louisiana Roads



Source: CDM Smith

According to a review of actual travel speeds on Louisiana's NHS roads, the most severe congestion in the state is focused along several roadway sections on highly traveled portions of I-10 in Baton Rouge and New Orleans. Other interstate sections also experience delays and some roadways on the secondary system experience consistently slow speeds. In some cases slow speeds may be an indication of operational issues rather than capacity issues.

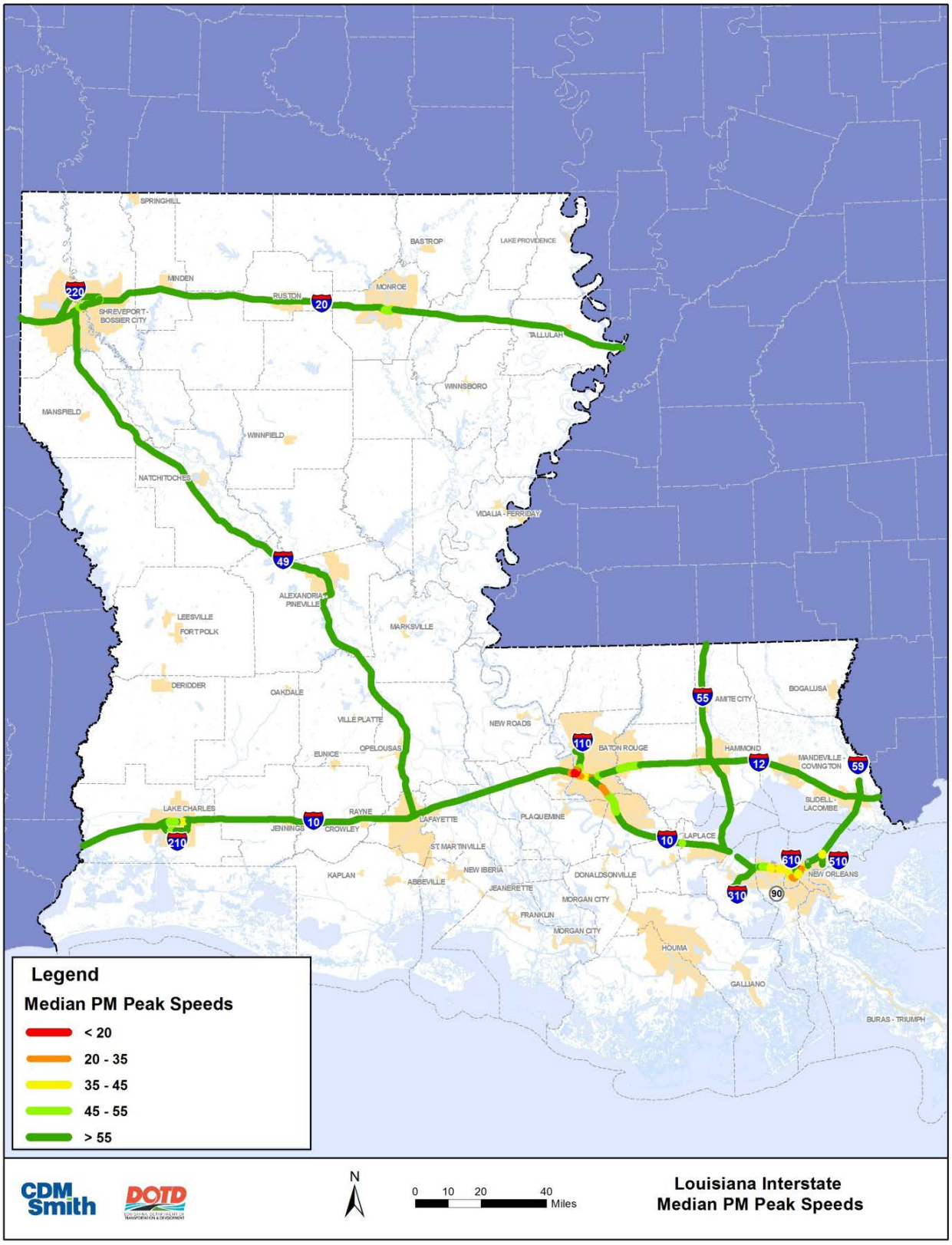
The National Performance Management Research Data Set (NPMRDS), from FHWA, provides detailed information about vehicle speeds on NHS roadways. To identify potential bottlenecks (locations of recurring congestion), the NPMRD was analyzed for the evening peak hour of travel, using 3 months of weekday speed data collected in 2014. The result is a summary of the IHS by median evening peak speeds. **Figure 4-7** presents this information and shows the areas that have experienced recurring congestion and are likely to experience congestion in the future. While the most congested areas are limited to a handful of roadway segments, the potential bottlenecks along those segments can create long delays and long queues. As noted, I-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. **Table 4-8** summarizes congested locations by interstate.

Table 4-8: Congested Locations by Interstate in the Evening Peak Hour, 2014

Median p.m. Peak Speed	Interstate Location
15 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 Mississippi state line • Portions of I-49 in Shreveport, Natchitoches, SR 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

Figure 4-7: Median Speeds on the Interstate System in the Evening Peak Hour, 2014



Source: National Performance Management Research Dataset

Future Mobility and Congestion

Travel over the next 30 years is forecast to grow at a moderate rate of 1.5 percent per year. This is roughly proportional to population forecasts. Over time, and assuming no additional investments or policies are in place beyond those planned over the DOTD's 5 year capital plan, congestion will increase steadily. By the end of the planning horizon, 39 percent of travel will occur in congested conditions, meaning that 39 percent of VMT will encounter some level of delay. **Table 4-9** presents the estimated VMT and summary estimates of congestion for base year (2010) conditions and the Plan horizon year (2044).

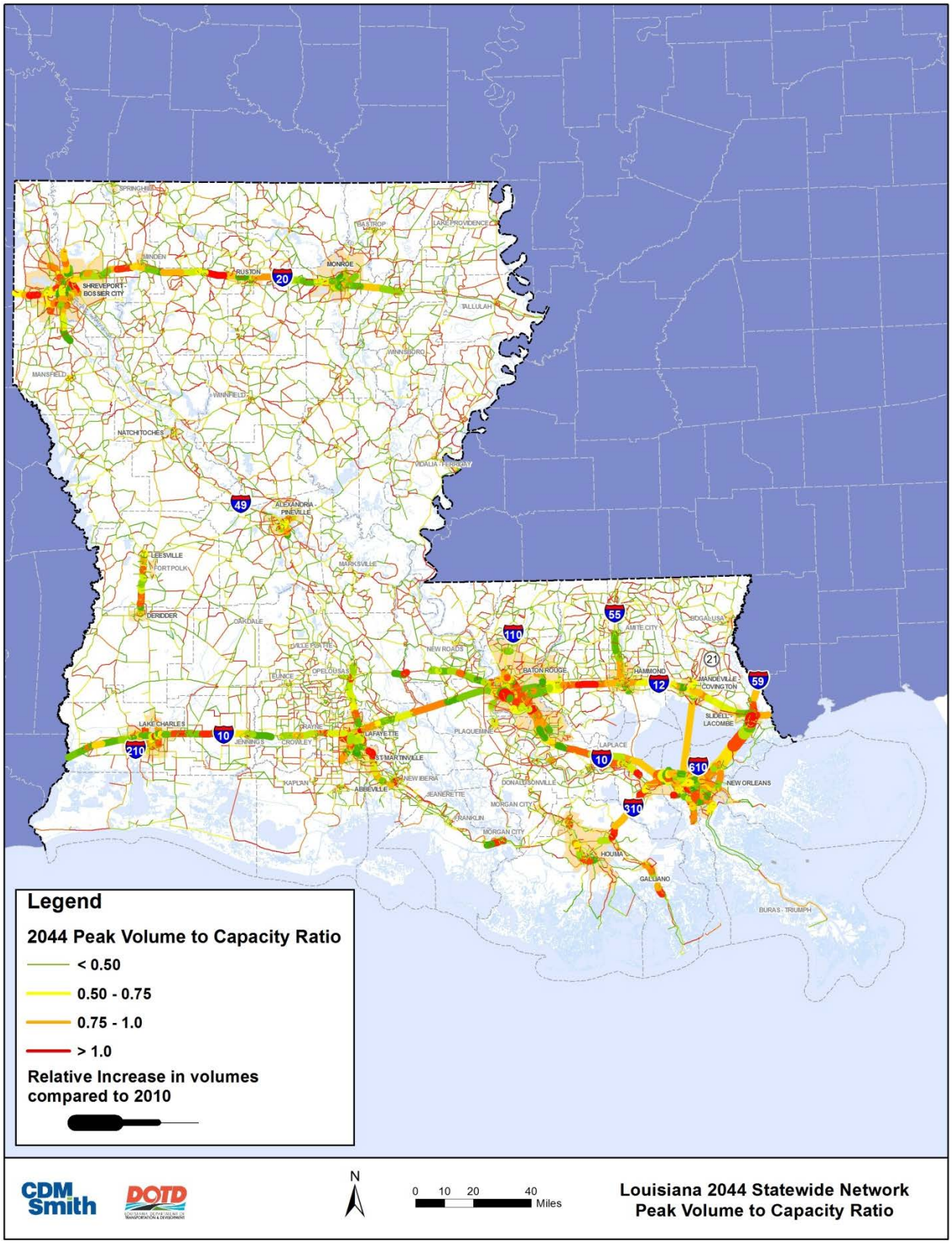
Table 4-9: Estimated 2044 Congestion by Roadway Type

	2010		2044	
Roadway	Weekday Vehicle Miles of Travel (Millions)	Percentage of Travel in Congestion	Weekday Vehicle Miles of Travel (Millions)	Percentage of Travel in Congestion
Interstates	36.8	17.8%	62.0	42.0%
Freeways and Other Principal Arterials	32.9	21.7%	51.7	47.3%
Minor Arterials, Collectors and Local Roads	38.6	9.4%	67.3	30.5%
All Roads	108.3	16.0%	181.16	39.2%

Source: CDM Smith

Figure 4-8 presents the long-range highway network level of service forecasts. The forecast shows traffic and congestion growing around Louisiana's metropolitan areas and spreading outward towards the suburbs, especially around New Orleans and Baton Rouge. Additional highway capacity, active traffic management, and policies and investments that shorten trips and provide additional choices in travel modes are possible strategies to address the congestion issues, especially on corridors such as I-10 and I-20.

Figure 4-8: Estimated 2044 Volume to Capacity Ratios on Louisiana Roads



Source: CDM Smith

4.3.6 Trucking

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

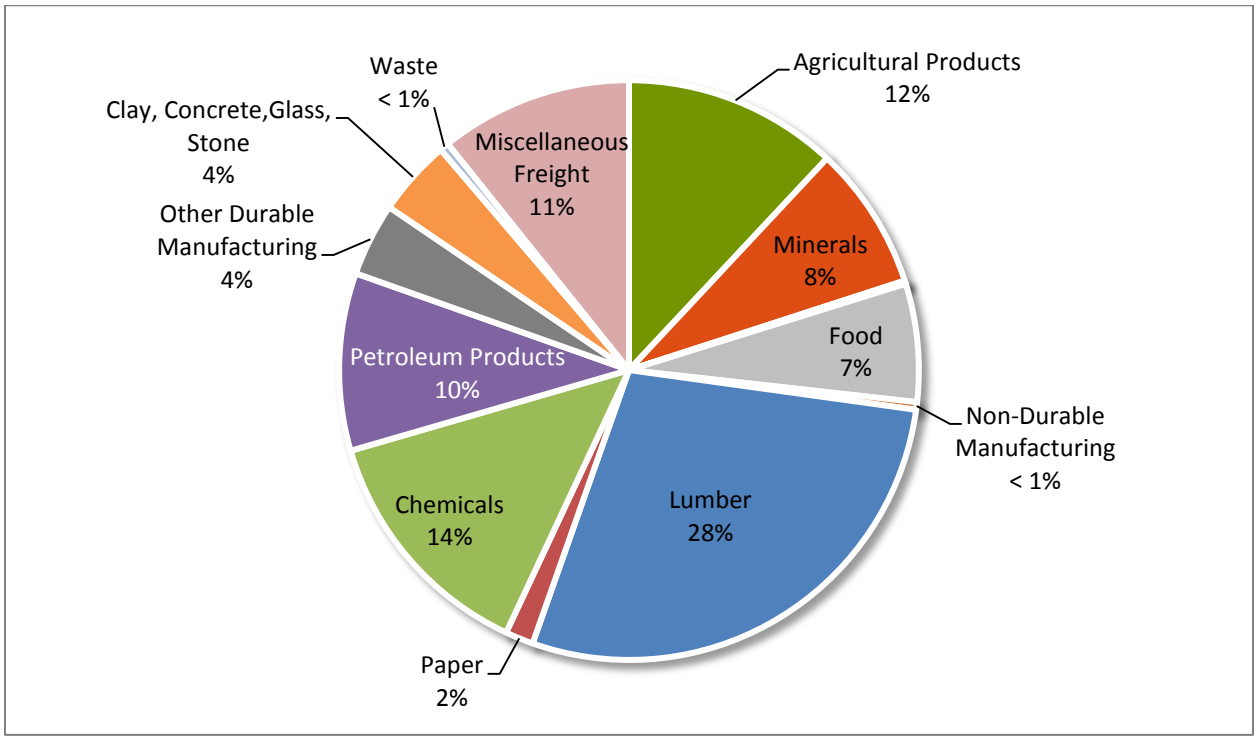
Along the six interstate routes spanning Louisiana are 13 static weigh station facilities – 10 weigh stations are located in pairs at five locations on either side of the highway median. These state-controlled sites are needed to ensure compliance with permitting, safety and weight-related regulations. Recent technology, to include WIM devices, the PrePass system, improved sign lighting, and advanced traveler information have enhanced the operational aspect of freight movement. Along Louisiana's IHS are 11 rest areas. While each site has available truck parking, a significant demand exists for more truck parking spaces.

Because trucks perform the initial pickup and delivery for most commodities moved by air, rail, and water, the connector routes between the freight transportation modes are critical links to facilitate the transfer of freight. 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 these intermodal connector projects rarely receive their due priority.

An efficient, reliable, and safe roadway system sets the conditions for supporting private sector supply chains. To be economically competitive, industries must be able to get their products to the right place at the right time for the right price.

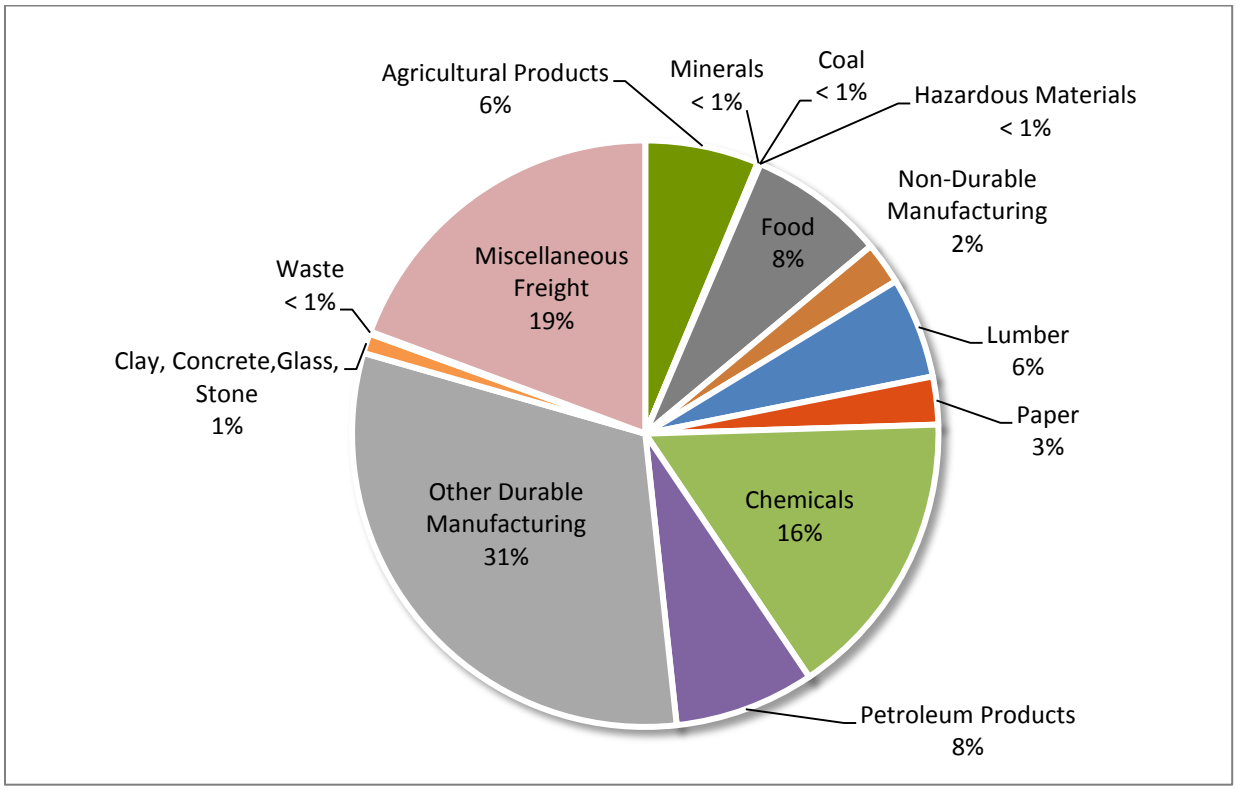
In 2012, trucks hauled 569 million tons of goods worth about $531 billion to, from, within, or through Louisiana. Excluding through trucks, the corresponding figures are $514 million and $413 billion, respectively. **Figures 4-9** and **4-10** summarize the value and tonnage of commodities, for all combined exports, imports, and internal truck shipments, but exclude through movements to show shipments that produce economic value to the state. While lumber is the largest commodity by weight, "other durable manufacturing" is the largest commodity in terms of value. The "other durable manufacturing" commodity includes finished products such as furniture, equipment, and machinery.

Figure 4-9: Tonnage of Commodities Shipped by Truck to, from or within Louisiana, 2012



Source: 2009 Transearch Database and 2012 FHWA Freight Analysis Framework and CDM Smith. Excludes through movements

Figure 4-10: Value of Commodities Shipped by Truck to, from or within Louisiana, 2012



Source: 2009 Transearch Database and 2009 FHWA Freight Analysis Framework. Excludes through movements

Table 4-10 presents the distribution of truck freight that leaves, enters, or stays within Louisiana, by commodity type, weight, and value, excluding through commodities. 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.

Table 4-10: Truck Freight Commodities in Louisiana, by Tonnage and Value, 2012

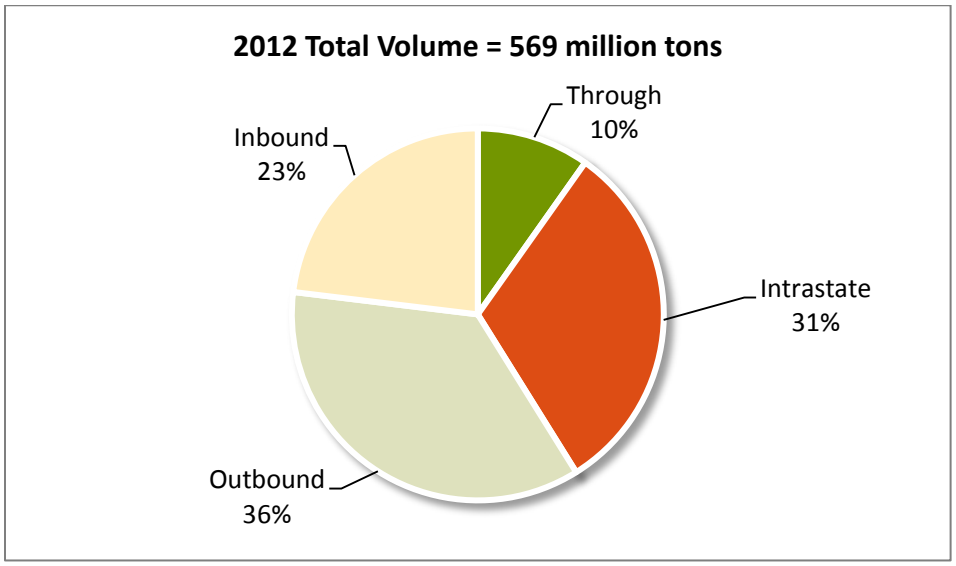
Commodity	Tons (thousands)	Percent	Value ($ thousands)	Percent	Value per Ton($)
Agricultural Products	68,199	12%	$32,100,969	6%	$471
Chemicals	73,683	14%	$74,045,329	16%	$1,005
Clay, Concrete, Glass, Stone	24,333	4%	$5,439,700	1%	$223
Coal	922	0%	$23,467	0%	$25
Food	41,517	7%	$39,718,044	8%	$957
Hazardous Materials	12	0%	$323,275	0%	$27,354
Lumber	148,720	28%	$24,063,663	6%	$162
Minerals	41,389	8%	$553,060	0%	$13
Miscellaneous Freight	64,166	11%	$89,418,394	19%	$1,394
Non-Durable Manufacturing	3,903	0%	$21,879,220	2%	$5,606
Other Durable Manufacturing	27,686	4%	$193,868,078	31%	$7,002
Paper	9,097	2%	$11,688,030	3%	$1,285
Petroleum Products	61,854	10%	$37,123,638	8%	$600
Waste	3,603	1%	$743,478	0%	$206
Total	**569,084**	**100%**	**$530,968,347**	**100%**	**$933**

Source: 2009 Transearch Database, 2012 Freight Analysis Framework, includes through movements

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 4-11**).

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

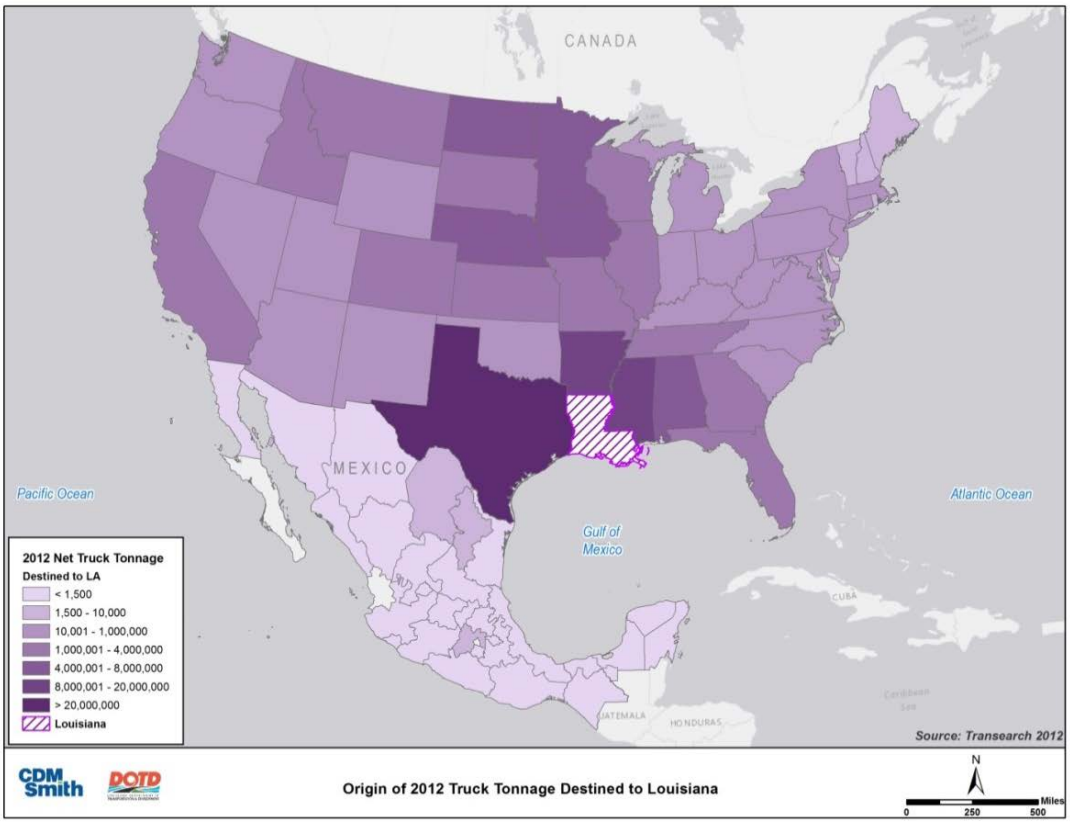
Figure 4-11: Louisiana Truck Tonnage by Traffic Type, 2012



Source: 2009 Transearch Database and 2012 Freight Analysis Framework

Figure 4-12 below 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.

Figure 4-12: Inbound Truck Freight Shipments by State of Origin, 2012

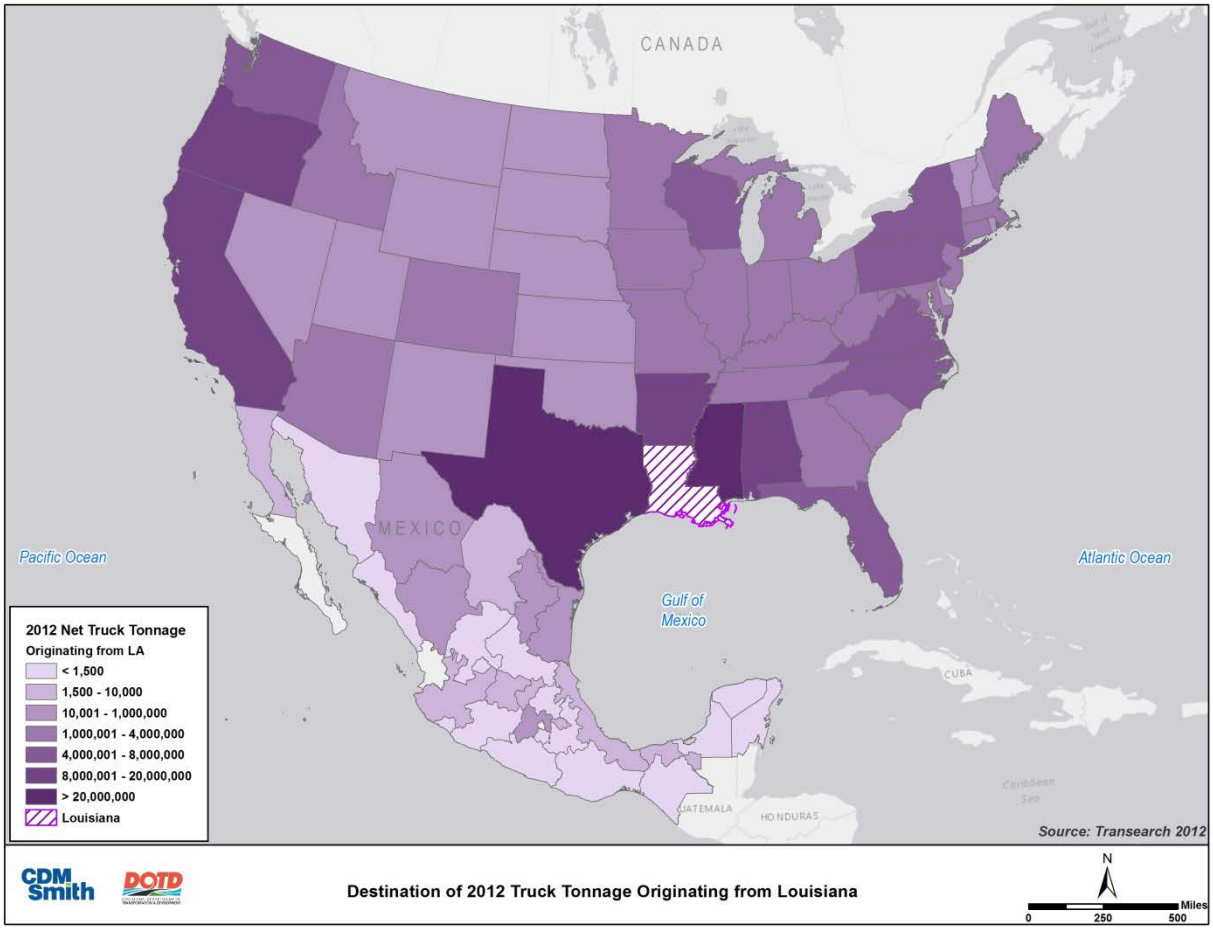


Source: 2009 Transearch Database and 2012 Freight Analysis Framework

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 4-13 below 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 4-13: Outbound Truck Freight Shipments by State of Destination, 2012



Source: 2009 Transearch Database and 2012 Freight Analysis Framework

Routes

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 4-14**, 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.

Figure 4-14: Highway Freight Tonnage Flows, 2012

Source: 2009 Transearch Database and 2012 Freight Analysis Framework

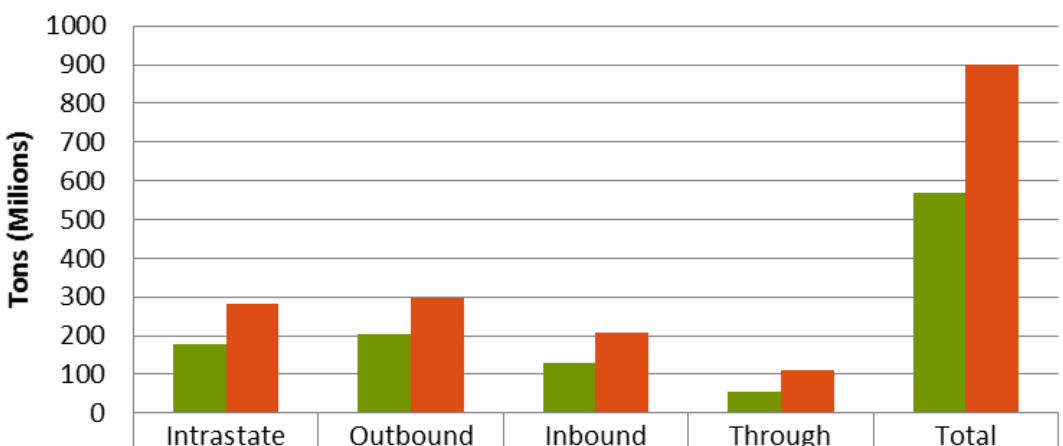
Truck Freight Forecasts

Truck borne freight is projected to grow by 58 percent by 2038 (**Figure 4-15**). Inbound truck tonnage is projected to grow by 59 percent, outbound by 47 percent, internal 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)[5]. These four groups will make up more than 63 percent of the growth in the freight tonnage transported by truck.

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 2038 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 2038 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 2038 forecast for the East South Central region's (Alabama, Kentucky, and Tennessee) exports to Louisiana.

Figure 4-15: Year 2038 Forecasts of Louisiana Truck Tonnages by Traffic Type



	Intrastate	Outbound	Inbound	Through	Total
2012	178.2	203.7	131.3	55.8	569.1
2038	282.3	299	208.9	109.5	899.7

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

Between 2012 and 2038, freight shipments from, to, or within Louisiana are forecast to grow at an annualized rate of 1.7 percent per year (**Table 4-11**), roughly in line with general economic forecasts.

[5] *These figures include through movements and do not correspond to the figures in Table 4-11, which excludes them*

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 4-11** excludes through movements to show freight movements of true economic value to the state.

Table 4-11: Forecast Truck Freight Tonnage by Commodity, 2012 and 2038

Commodity	Tons (Thousands)		Growth per Year	Value (Thousands)		Growth per Year
	2012	2038		2012	2038	
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	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: 2012 FHWA Freight Analysis Framework, 2009 Transearch Data and CDM Smith, excludes through movements

4.4 Ports and Waterways

Louisiana's ports and waterways are a critical part of the State's transportation system. Louisiana is ranked first in maritime transportation in the country. The port and waterway system and its users are significant for Louisiana businesses and households.

Louisiana's extensive ports and waterways system includes port terminals, harbors, navigable deep and shallow-draft waterways, and locks on the waterways. The State's maritime traffic serves businesses and their customers throughout the state and the nation.

4.4.1 Navigable Waterway Corridors

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.

The 17 major waterway corridor segments comprising Louisiana's waterborne system are categorized as either deep-draft, inland, or coastal (**Table 4-12**). The major economic activities in foreign commerce are concentrated on the 236-river-mile-long section on the lower Mississippi River below Baton Rouge. The ship channel depth in this section is maintained at 45 feet, with a potential maximum allowable depth of 55 feet. In addition, the Calcasieu Ship Channel (40 feet deep) serves as the access channel to the Port of Lake Charles and also serves several other private terminals.

Table 4-12: 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) • 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, 2012. *Bayou Lafourche is 28 feet deep at Port Fourchon.*

Figure 4-16 illustrates the total tonnage of Louisiana's major waterways 2012. The Mississippi River and the GIWW currently carry (and are expected to continue to carry) much of Louisiana's waterborne freight.

Figure 4-16: Louisiana Navigable Waterway Tonnage, 2012

Source: 2012 U.S. Army Corps of Engineers and CDM Smith

4.4.2 Ports and Intermodal Land Connections

Louisiana's intermodal port system consists of 40 ports and a large number of private terminals. For the purposes of this analysis, the port sector is presented in three main categories:

- Deep-draft ports, both public and private, engaged in foreign commerce
- Shallow-draft (inland) public and private 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 and commercial fishing

Louisiana has seven active deep-draft ports, one deep-draft port in development, 17 shallow-draft inland ports, and 15 coastal ports. These ports offer a variety of services and accommodate commodities from grains and farm products to support for fishing and petroleum industries. The public ports are listed in **Table 4-13**.

Table 4-13: 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. As of 2015, the LIGGT is in pre-construction.*

Deep-Draft Ports

Of the eight deep-draft ports in Louisiana, five located on the Mississippi River waterway segment from Baton Rouge to Head of Pass (Baton Rouge, South Louisiana, New Orleans, St. Bernard and Plaquemines) are among the largest in the nation in terms of tonnage handled. The Lake Charles Port is located on the Calcasieu ship channel, and the Louisiana Offshore Oil Port is located 18 nautical miles offshore from the Louisiana coast.

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 ships ("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.

The significant private-sector contribution to total port tonnage comes from cargo such as grains and coal exports, as well as some liquid petroleum shipments. The cargo-handling activities are highly automated using specialized and high volume equipment.

Shallow-Draft Inland Ports

Most of the 17 shallow-draft ports located on inland waterways function as industrial parks for water-related industries. However, several handle very large volumes of agricultural commodities. These ports facilitate diversification of the local economy and the creation of jobs in rural communities with limited development opportunities.

Coastal Ports

Louisiana is the nation's second largest producer of natural gas and third largest producer of crude oil among the 50 states. In terms of offshore oil and gas production, the Gulf of Mexico accounts for more than 90 percent of U.S. production. Of the 15 coastal ports, the three major public ports – Port Fourchon, Iberia, and Morgan City – serve as supply bases for the off-shore oil and gas industry, as well as for a large number of private terminals in the state.

4.4.3 Port Commodities and Tonnages

Table 4-14 presents the distribution of waterborne shipments within, from and to Louisiana as well as the value per ton of commodities. In 2012, Louisiana shipped or received over 296 million tons of goods worth $144 billion via the State's system of ports and waterways. Much of this freight was shipped through the Port of New Orleans and along the Mississippi River, by barge. 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. 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. Those two commodity groups, together with other durable manufactured goods, accounted for 87 percent of all shipments, by value. 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 4-14: Outbound and Inbound Water Freight Traffic by Major Commodities, 2012

Commodity	Tons (000)	Percent	Value ($000, 2012)	Percent	Value per Ton ($)
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%	$6,287
Lumber	56	0%	$27,784	0%	$494

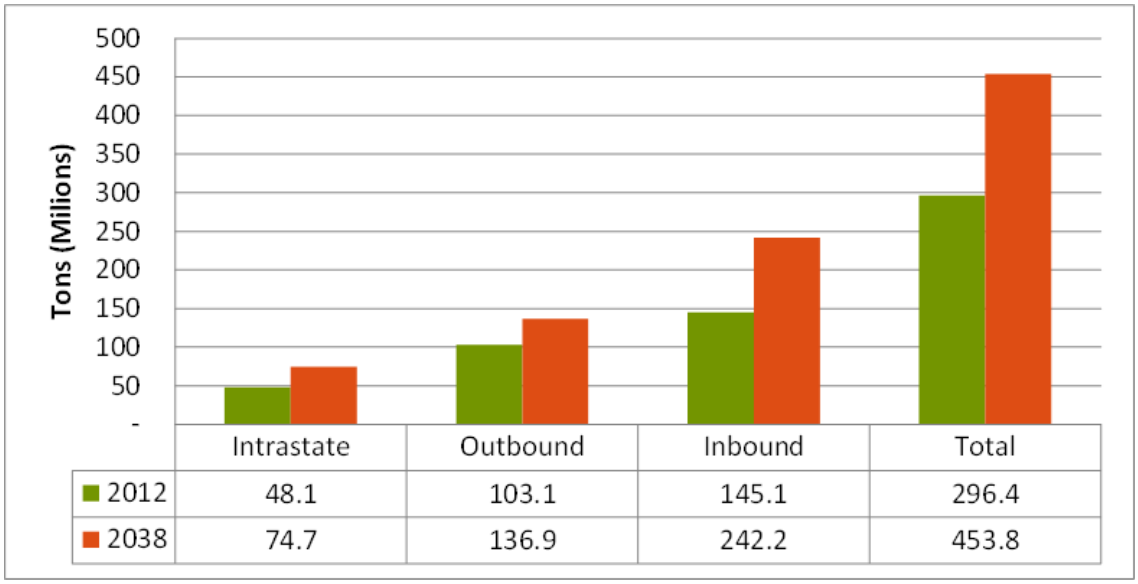
Commodity	Tons (000)	Percent	Value ($000, 2012)	Percent	Value per Ton ($)
Paper	24	0%	$50,858	0%	$2,119
Chemicals	29,030	10%	$30,408,032	21%	$1,047
Petroleum Products	109,199	37%	$66,921,777	47%	$613
Other Durable Manufacturing	10,695	4%	$27,770,381	19%	$2,597
Clay, Concrete, Glass, Stone	3,713	1%	$570,335	0%	$154
Waste	2,465	1%	$505,492	0%	$205
Miscellaneous Freight	9	0%	$30,439	0%	$3,382
Hazardous Waste	0	0%	$0	0%	$0
Warehousing	0	0%	$0	0%	$0
Total	**296,386**	**--**	**$143,908,639**	**--**	**$486**

Source: 2009 Transearch Data and 2012 Freight Analysis Framework

4.4.4 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 2038. Inbound traffic will grow disproportionately higher, at 2 percent than either outbound (1 percent) or internal (1.7 percent) traffic (see **Figure 4-17**).

Figure 4-17: Forecast Waterborne Freight Tonnage by Direction, 2012 and 2038



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

Shipments of Louisiana's primary waterborne commodities 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 1.0 and 2.4 percent per year, with durable 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 4-15**.

Table 4-15: Total Water Freight Traffic by Major Commodities, 2012 and 2038

	2012		2038		Annual Growth	
	Tons (000)	Value (000)	Tons (000)	Value (000)	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: 2012 FHWA Freight Analysis Framework and 2009 Transearch Data and CDM Smith

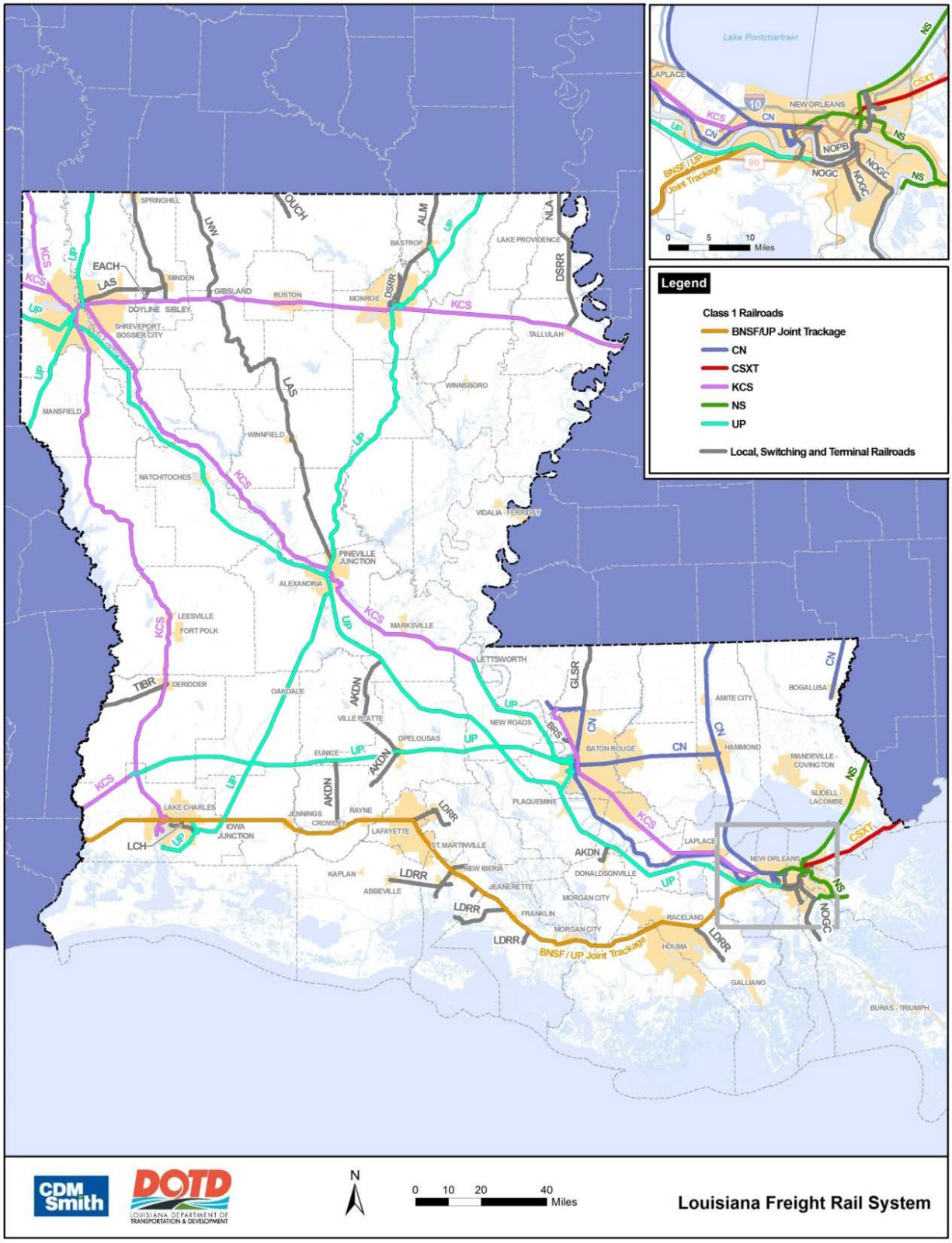
4.5 Freight Rail

Freight movement is also big business in Louisiana. According to the Association of American Railroads, Louisiana is 23rd in the nation in terms of the number of miles of track. The rail system provides critical linkages to other modes along the Gulf Coast and inland and is operated by six large Class I railroads and 15 smaller local, switching, and terminal railroads, as shown in **Figure 4-18**. The system consists of 2,912 route miles, excluding leases and trackage rights.

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[6] railroads operating in the state own the remaining 411 route miles in Louisiana.

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

Figure 4-18: Louisiana Freight Rail System



Source: DOTD

4.5.1 Class I Railroads

There are six Class I railroads, or large railroads, which serve Louisiana. The railroads are:

- BNSF Railway
- CN Railway
- CSX Transportation
- KCS Railway
- NS Railway
- UP Railroad

4.5.2 Local, Switching, Terminal Railroads

There are 15 local, switching, and terminal switching railroads in Louisiana. The railroads are commonly called short lines or small railroads. Of the 15, 13 are providing freight hauling services; the other two are not operational.

The 13 operating short lines provide shippers on their lines with access to the national rail system through connections to the Class I or large railroads. One short line, the New Orleans Public Belt Railroad, provides connections between all six Class I railroads in New Orleans. The other short lines, for the most part, connect to a single Class I railroad.

A key issue with the short lines is the inability of many of these (**Figure 4-19**) to accommodate the 286,000-lb. weight of a total loaded railcar. With freight demands increasing, this will become a constraint to rail movements in the future.

Figure 4-19: Short Lines Not Capable of 286,000-lb. Weights

Source: 2015 Louisiana State Rail Plan

4.5.3 Rail Freight Commodities

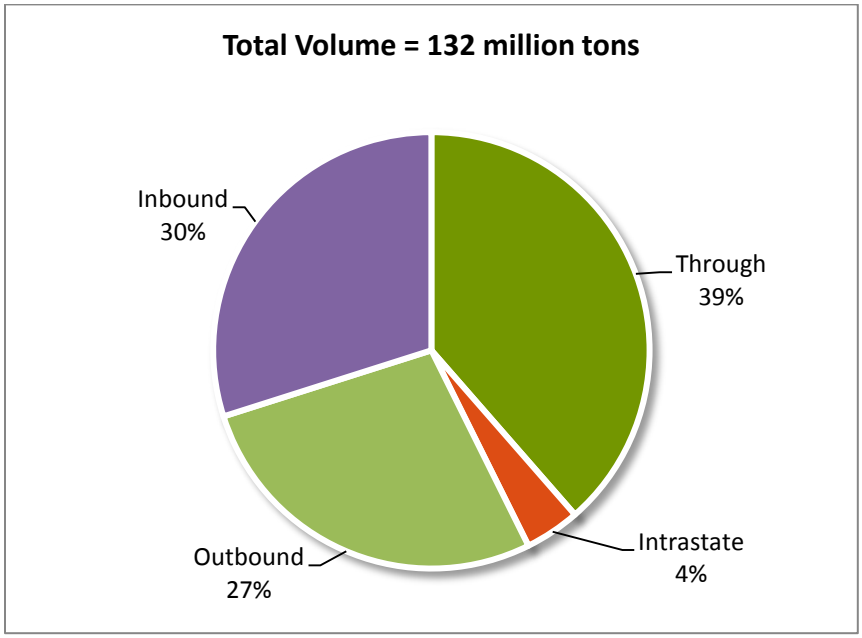
Louisiana plays an important role in the nation's freight rail transportation. In 2012, Louisiana's railroads carried a total of 132 million net tons and moved 2.0 million carloads of goods, with a total value of $147 billion (**Table 4-16** and **Figure 4-20**). While through-traffic leads directional movements (51.0 million tons, 39 percent of total), both interstate inbound (39.6 million tons, 30 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. Most of the through-traffic is generated from flows between the markets located in the Southwest, Southeast, and Mountain regions.

Table 4-16: 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: 2012 Transearch Data and CDM Smith

Figure 4-20: Louisiana Rail Freight Tonnage by Direction, 2012



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

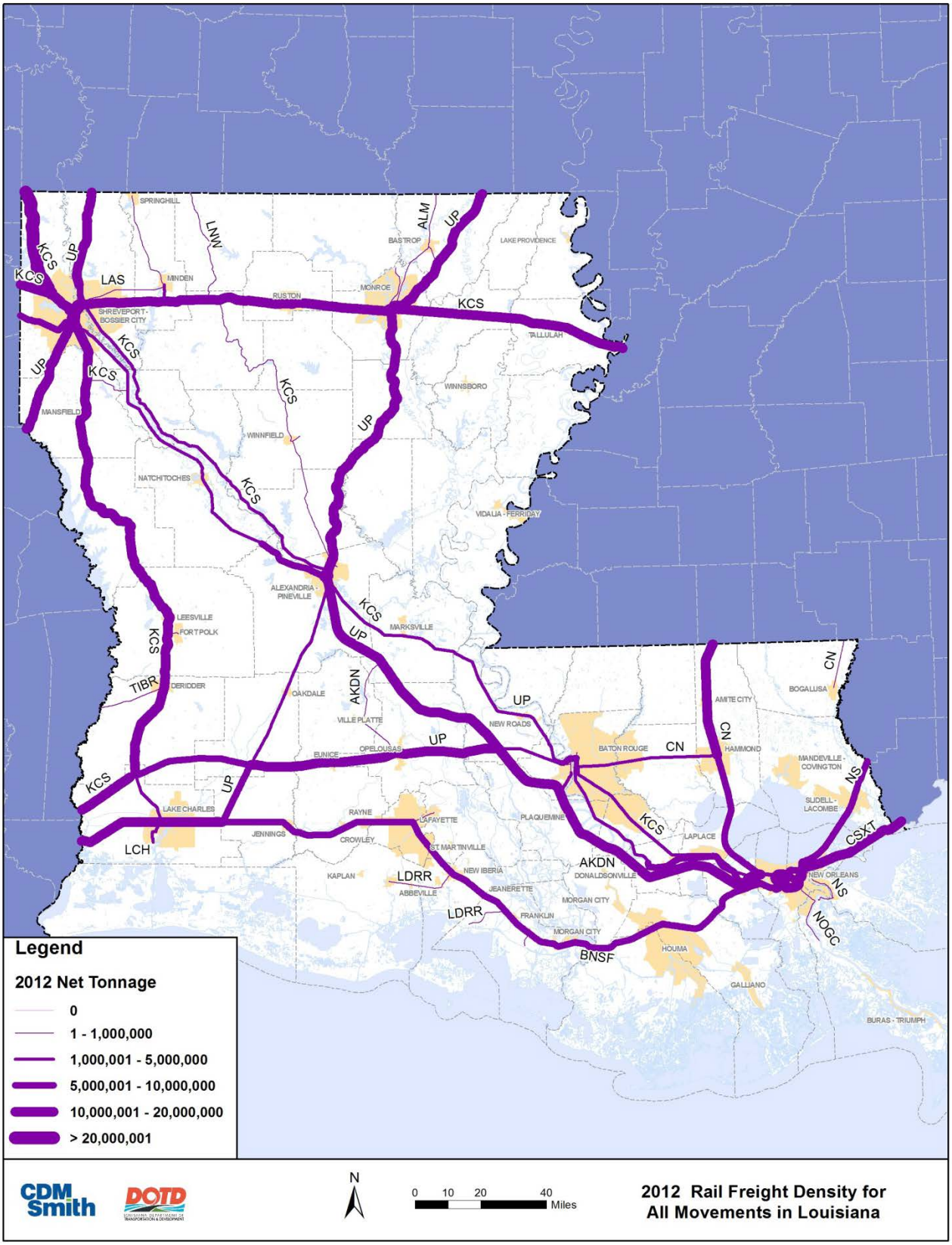
Inbound, outbound, and intrastate freight flows generate commerce in Louisiana. Outbound freight flows represent products mined or produced in Louisiana or imported through Louisiana that are railed

to other states. Inbound freight flows represent commerce that is transported into the state for consumption or value-added processing or onward export. Intrastate movements represent Louisiana economic activity or trade at both the origin and termination of the rail movement. Hence, inbound, outbound, and intrastate freight flows facilitate commerce by creating employment opportunities for Louisiana's citizens.

In terms of value, in 2012 Louisiana shipped more goods out of state than it imported ($57.5 billion vs. $35.2 billion) and the per ton value of outbound goods was considerably higher ($1,584 vs. $889). Internal freight represents commodities that flow between parishes within Louisiana. Such internal rail movements account for only 5 percent of the total value of rail shipments.

Tonnage densities handled on Louisiana rail lines are shown in **Figure 4-21**. 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 4-21: Rail Freight Tonnage Flows, 2012

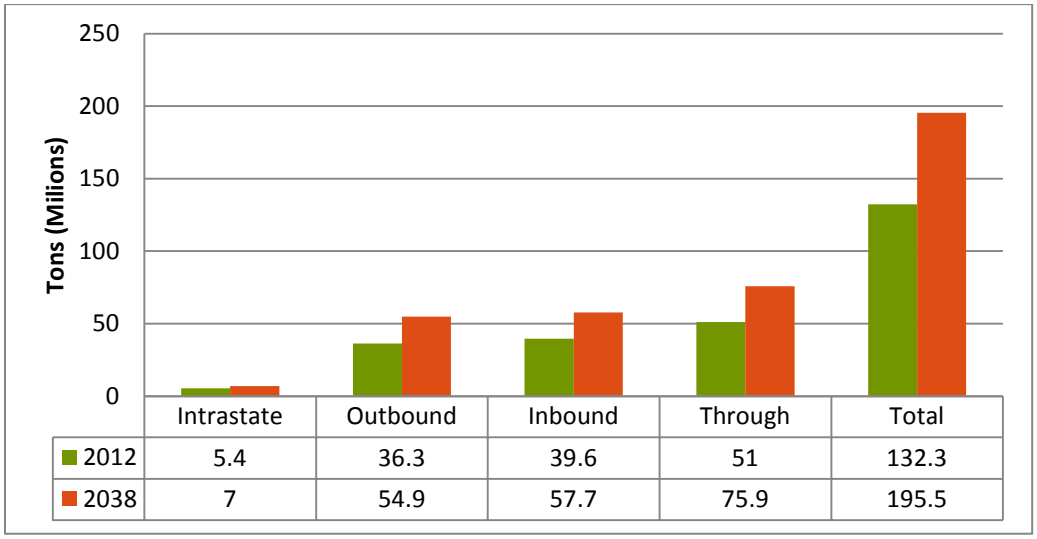


Source: 2009 Transearch Database and 2012 Freight Analysis Framework

4.5.4 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 2038, 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 2038 – 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 2038 in **Figure 4-22**.

Figure 4-22: Forecast Rail Freight Tonnage by Direction, 2012 and 2038



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

A summary of all directional commodity movements in **Table 4-17** suggests slight decreases in coal and petroleum/coal movements. Conversely, many product tonnage 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 2038.

Table 4-17: Forecast Rail Freight Tonnage by Commodity, 2012 and 2038

Commodity	2012		2038		% 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%	-0.32%
Farm Products	13.2	9.90%	20.6	10.50%	55.84%	1.73%
Nonmetallic Minerals	10.8	8.40%	18.6	9.50%	71.53%	2.11%
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%	-0.36%
Pulp, Paper or Allied Products	7.0	4.90%	12.4	6.30%	77.90%	2.22%
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%

Commodity	2012		2038		% Change	
	Tons (mil)	Share	Tons (mil)	Share	Total	CAGR
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%	2.38%
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%**

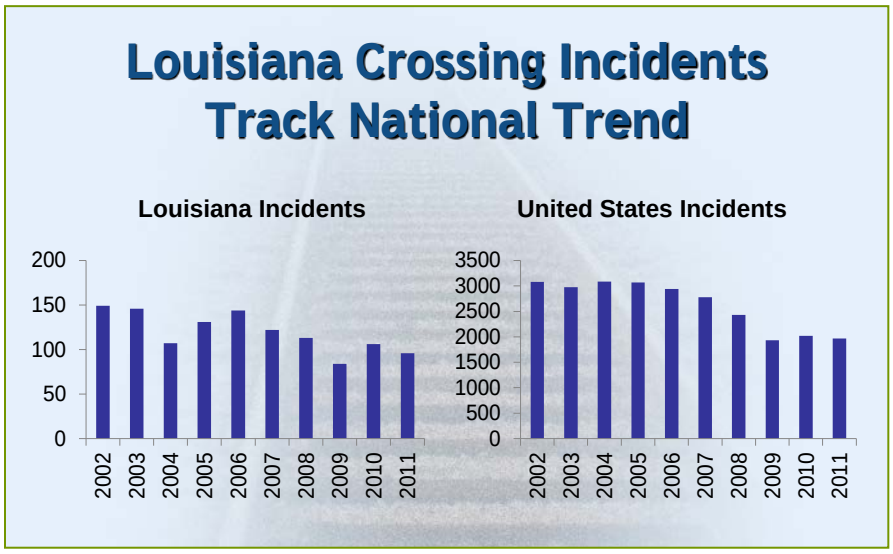
Source: 2012 FHWA Freight Analysis Framework, 2009 Transearch Data and CDM Smith

4.5.5 Rail Crossing Safety

Louisiana has witnessed a decline in highway-rail crossing accidents; this mirrors national trends (**Figure 4-23**). DOTD's Grade Crossing Safety Program currently has a budget goal of about $8 to $10 million for each state fiscal year for highway-rail at-grade crossing safety.

The intention of the Railroad Grade Separation Program is to replace existing at-grade crossings with grade separated overpasses. The program initially received $1 million of safety funds for engineering design and plan development. Funding was increased to $8 million in FY 2014-2015.

Figure 4-23: Louisiana Railroad Crossing Incidents, 2002 to 2011



4.6 Aviation

Louisiana's aviation system of airports consists of airports that work together to meet the needs of different market segments. The aviation system consists of commercial service and general aviation airports (**Figure 4-24**). General aviation airports are those that support non-commercial (airline) aviation, such as corporate, training, agricultural, 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 2012 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 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 4-24: Louisiana Aviation System

Source: 2015 Louisiana Aviation System Plan

4.6.1 Carriers and Enplanements

Passenger airline service at Louisiana's seven commercial service airports is provided by nine different airlines, primarily domestic legacy carriers (**Table 4-18**). However, several low-cost carriers, such as Allegiant, JetBlue, Southwest, and Frontier, also operate at system airports.

Table 4-18: Air Carriers Operating at Louisiana's Commercial Airports

ID	Associated City	Airport	Nonstop Destinations	No. of Air Carriers	Air Carriers
AEX	Alexandria	Alexandria International	3	3	United, American/ US Airways, Delta
BTR	Baton Rouge	Baton Rouge Metropolitan, Ryan Field	5	4	United, American/US Airways, Deltas
LCH	Lake Charles	Lake Charles Regional	2	2	United, American/ US Airways
LFT	Lafayette	Lafayette Regional	3	3	United, American/ US Airways, Delta
MLU	Monroe	Monroe Regional	4	3	United, American/ US Airways, Delta
MSY	New Orleans	New Orleans Louis Armstrong International	37	8	United, American/ US Airways, Delta, Air Canada, Frontier, JetBlue, Southwest/ AirTran
SHV	Shreveport	Shreveport Regional	7	4	United, American/ US Airways, Delta, Allegiant

Source: Individual Airport Websites

Between 2003 and 2014, passenger enplanements at Louisiana's commercial service airports increased at a *very moderate* to a *moderate to high* rate. Alexandria, Lake Charles, and Lafayette have grown at over 4 percent average annual rates, indicating the presence of competitive fares, increasing service levels and increasing demand.

The year-to-year change in enplanements is volatile and subject to market conditions, carrier offerings, and general economic conditions (**Table 4-19**).

Table 4-19: Historical Enplanements, 2003 to 2014

Year	Metairie/New Orleans	Baton Rouge	Shreveport	Lafayette	Alexandria	Monroe	Lake Charles
2003	4,647,706	355,491	290,101	155,520	112,497	102,280	40,911
2004	4,839,400	368,354	304,490	162,080	153,124	115,424	44,108
2005	3,912,884	515,991	319,960	176,448	138,494	112,086	46,399
2006	3,127,963	526,998	306,832	207,103	137,283	111,119	56,120
2007	3,770,246	482,253	307,312	219,442	145,761	109,011	56,134
2008	3,990,374	416,568	283,624	210,020	142,223	88,229	50,984
2009	3,916,746	347,815	242,919	205,913	154,736	85,314	55,174
2010	4,088,889	382,687	237,945	220,211	179,129	100,419	65,340
2011	4,255,411	396,403	265,104	222,795	188,286	107,290	61,325

Year	Metairie/New Orleans	Baton Rouge	Shreveport	Lafayette	Alexandria	Monroe	Lake Charles
2012	4,293,624	406,318	276,460	226,504	189,476	101,034	56,815
2013	4,576,539	400,712	279,897	233,498	183,899	115,757	65,281
2014	4,870,569	380,153	307,540	247,857	175,526	120,589	69,334
Average Annual Change	**0.43%**	**0.61%**	**0.53%**	**4.33%**	**4.13%**	**1.51%**	**4.91%**

Source: FAA Enplanement Data, 2015

Forecast Enplanements

According to FAA forecasts (**Table 4-20)**, Louisiana's commercial aviation airports will experience growth in passenger demand over the next 25 years. New Orleans will remain by far the largest airport, with 7.8 million enplanements by 2040 (according to the forecast), while Baton Rouge will grow at a negligible rate. Lafayette and Alexandria are forecast as the fastest growing airports in percentage terms, albeit at a slower pace than the 2003 to 2014 period. The forecasts do not appear to indicate that there is a need for additional runway capacity at these airports in the near future.

Table 4-20: Forecast Enplanements at Louisiana Commercial Airports, 2015 to 2040

Year	Metairie/New Orleans	Baton Rouge	Shreveport	Lafayette	Alexandria	Monroe	Lake Charles
2015	4,987,343	391,323	301,025	246,269	174,040	123,339	72,204
2020	5,675,876	377,251	319,679	280,603	198,569	132,701	76,673
2025	6,187,411	366,907	339,815	319,831	227,076	142,783	81,429
2030	6,710,490	386,532	361,590	364,638	260,206	153,644	86,490
2035	7,257,820	406,670	385,191	415,833	298,707	165,345	91,864
2040	7,796,792	422,976	410,818	474,328	343,448	177,952	97,590
Average Annual Growth Rate	**1.80%**	**0.31%**	**1.25%**	**2.66%**	**2.76%**	**1.48%**	**1.21%**

Source: FAA Terminal Area Forecast issued April 2015

4.6.2 Air Cargo

Air cargo operators are another major user of airports, with integrated express, all-cargo carriers, contract feeders, and regional cargo airlines all making use of airport facilities in the state. New Orleans International and Shreveport Regional are the two busiest airports in Louisiana in terms of total cargo tonnage handled, with 266,000 and 170,000 tons, respectively, handled between 2006 and 2010 (**Table 4-21**). While air cargo typically handles high-value goods and is critical for some just-in-time operations, Louisiana's air cargo operations account for a negligible amount of the freight delivered from the state by weight – less than 1 percent of all cargo.

Table 4-21: Historic Air Cargo Tonnage (Short Tons), 2006 to 2010

Airport	2006	2007	2008	2009	2010	Total
AEX	35	40	29	20	9	132
BTR	26,577	23,044	14,643	55	31	64,350
LFT	15,343	15,959	14,086	12,513	12,469	70,370
LCH*	3	2	2	-	-	7
MLU*	780	744	303	106	75	2,008
MSY	50,688	49,463	49,866	57,939	57,986	265,941
SHV	31,537	34,835	37,240	33,007	33,322	169,941

*Source: ACI North America, *estimates by CDM Smith*

Commodities and Tonnages

Louisiana airports ship or receive less freight than the other modes; however, the mode provides a critical service to the State's businesses. As shown in **Table 4-22**, 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. These commodities account for more than a third of the total air freight value coming into Louisiana.

Table 4-22: Airborne Freight Shipments by Major Commodities, 2012

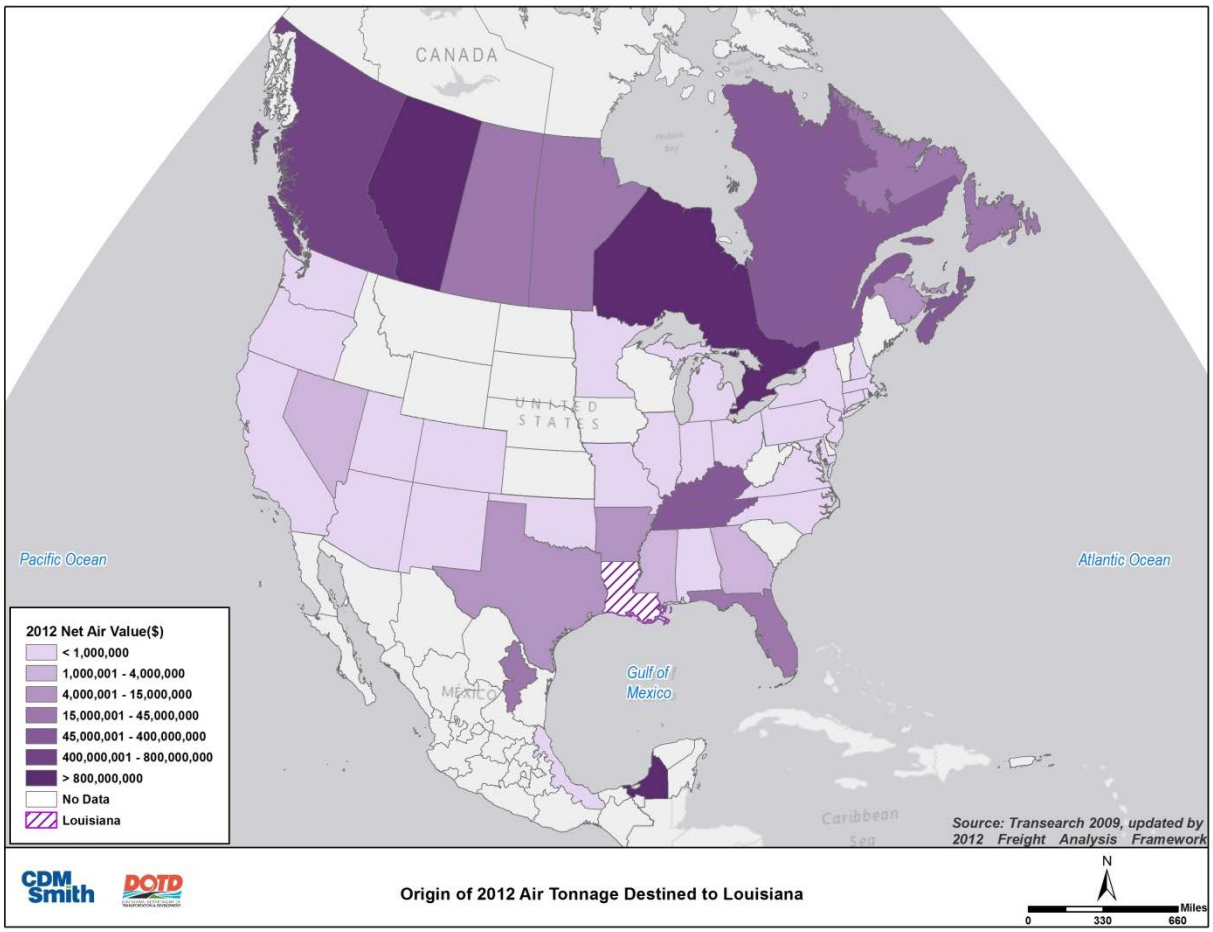
Description	Tonnage		Value ($millions)		Average Value ($/ton)
	Amount	Percent	Amount	Percent	
Transportation Equipment, NEC	9,771	6.45%	58	0.40%	$5,936
Misc. Freight Shipments	15,802	10.43%	975	6.72%	$61,701
FAK Shipments	4,926	3.25%	74	0.51%	$15,022
Carburetors, Pistons, Etc.	6,966	4.60%	72	0.50%	$10,336
Missile or Space Vehicle Parts	5,710	3.77%	1,652	11.39%	$289,317
Electronic Data Processing Equipment	3,594	2.37%	1,614	11.13%	$449,082
Radio or TV Transmitting Equipment	3,487	2.30%	2,511	17.31%	$720,103
Bolts, Nuts, Screws, Etc.	2,957	1.95%	37	0.26%	$12,513
Mechanical Power Transmission Equipment	1,838	1.21%	56	0.39%	$30,468
Valves or Pipe Fittings	2,427	1.60%	154	1.06%	$63,453
Other	94,036	62.06%	7,301	50.34%	$77,640
TOTAL	**151,515**	**100.00%**	**14,505**	**100.00%**	**$95,733**

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

Origins and Destinations of Airborne Freight

Figure 4-25 depicts the states that ship airborne freight to Louisiana. Kentucky, Arkansas, and Tennessee (which has a FedEx Hub) are the leading states exporting goods to Louisiana. Campeche, Mexico on the Yucatan peninsula and Alberta and Quebec, Canada are important trading partners as well. Together, these regions account for nearly 60 percent of the inbound freight (by value).

Figure 4-25: Origin of Airborne Freight Destined for Louisiana, 2012



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

Of the commercial service airports in the state, the two primary air cargo airports are in New Orleans and Shreveport (**Table 4-23**). These two airports accommodate nearly all of Louisiana's cargo value at 99.8 percent. The Louis Armstrong New Orleans International Airport accommodates most of this freight (98.3 percent) while the Shreveport Regional Airport handles 1.5 percent of the State's goods in terms of value.

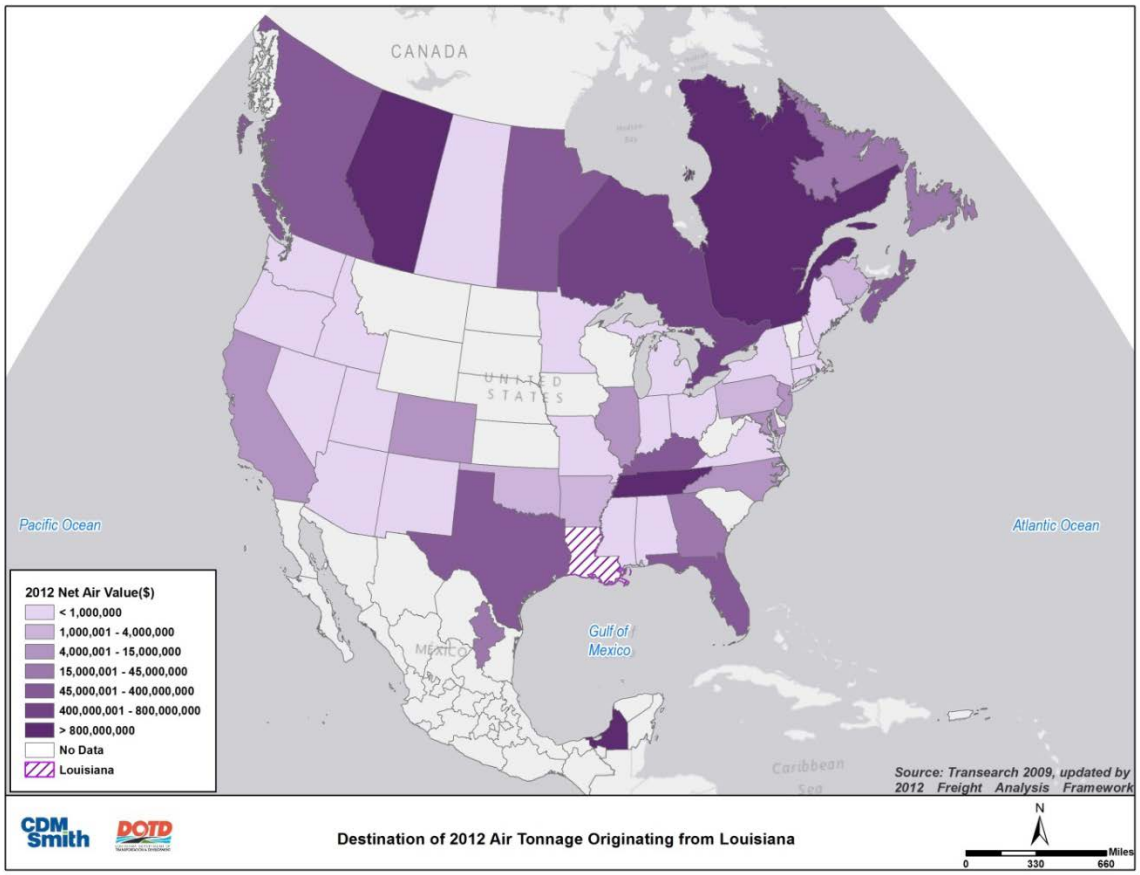
Table 4-23: Air Freight Traffic by Airport, 2012

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: 2012 FHWA Freight Analysis Framework, 2009 Transearch Data and CDM Smith

Figure 4-26 below depicts the airborne freight shipments from Louisiana to U.S. and Mexico destinations. Tennessee, Texas, California, Texas, and Kentucky were the primary states to which airborne goods were shipped in 2012. However, the Canadian provinces of Quebec and Alberta and the Mexican state of Campeche together accounted for 63 percent of all freight shipped from Louisiana, according to the 2012 freight data.

Figure 4-26: Destination of Airborne Freight from Louisiana, 2012

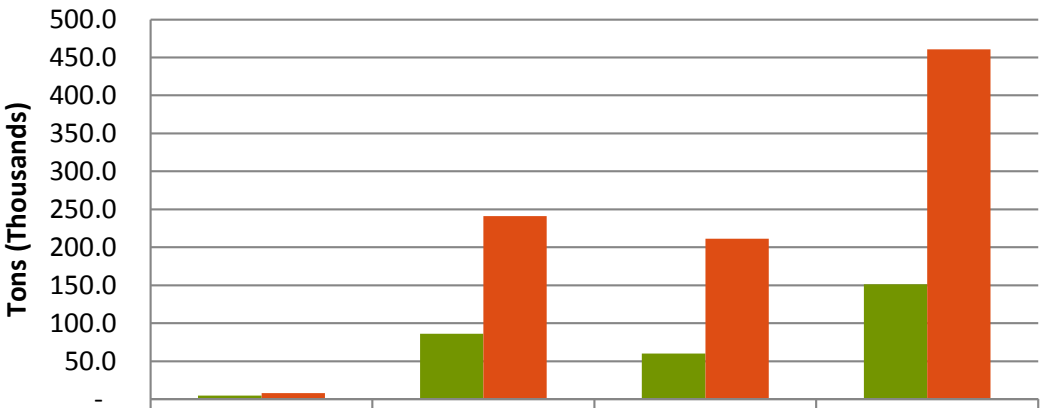


Source: 2012 FHWA Freight Analysis Framework, 2009 Transearch Data and CDM Smith

4.6.3 Airborne Freight Shipment Forecasts

Outbound air shipments are forecast to remain higher than imports, increasing 180 percent over present volumes (**Figure 4-27**). 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 4-27: Forecast Airborne Freight Tonnage by Direction, 2012 and 2038



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

Source: 2012 FHWA Freight Analysis Framework, 2009 Transearch Data 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 4-24**).

Table 4-24: Air Freight Traffic by Major Commodities, 2038

Commodity	Tons		Growth per Year	Value (Thousands)		Growth per Year
	2012	2038		2012	2038	
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%

Commodity	Tons		Growth per Year	Value (Thousands)		Growth per Year
	2012	2038		2012	2038	
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: 2012 Transearch database and CDM Smith

4.7 Public Transportation

For many individuals, public transportation represents an avenue to life-enriching activities – such as employment, shopping, recreational areas, educational facilities, etc. – within Louisiana's communities. For others, public transit provides access to even more basic needs, including transportation to life-sustaining services such as dialysis, chemotherapy, or other critical health services. Without public transportation, many participating and contributing members of the community could become wards of social service agencies that rely heavily on public funding. By investing in mobility options, public funding can be applied proactively to offer mobility options within Louisiana's communities.

Another significant need for public transportation services is the ability to relieve congestion on crowded streets and highways, particularly during peak travel hours. In Louisiana, the opportunity to build more lane miles of highway or city streets is severely constrained by geography, land ownership, and available funding. Public transportation also plays an important role in emergency situations. Louisiana's rural and urban public transportation systems are an integral component of the necessary infrastructure to respond to hazards, threats, and emergencies of all kinds.

The statewide transportation network is expected to accomplish far more than just providing public transportation for the least cost. Public transportation, as one of the many modes, can provide mobility for all residents within a community; reduce congestion during peak periods; conserve energy by reducing single-occupancy vehicle usage; reduce air pollution; and enhance economic development. Federal, state, and local policies regarding these various objectives, as well as those that pertain to funding must be coordinated. There are direct and indirect benefits of a balanced transportation system in which public transportation plays a significant role. Shifting population segments throughout the state, the aging population, and the cost of private vehicle ownership are factors that support a strong public transportation system.

4.7.1 Public Transportation Performance Objectives

The DOTD does not own or operate public transportation services directly. However, it manages several FTA programs, provides grants for services in rural areas, and participates in coordination activities with public transit agencies in metropolitan areas. The 2019 Strategic Plan has established an objective to expand the reach of transit in rural areas:

Objective: To expand public transportation services that provide low-cost public transportation for the rural areas of the state by increasing the number of participating parishes to 50 by June 30, 2018.

4.7.2 Overview of Public Transportation Services

Public transportation agencies provided more than 37 million rides to Louisiana residents in FY 2014 (**Table 4-25**). Public transit service in Louisiana can be divided into four categories of service: 1) urban transit; 2) enhance mobility of seniors and individuals with disabilities; 3) rural transit; and 4) intercity transit.

Table 4-25: Louisiana Public Transit, FY 2014

FTA Program	Ridership
5307 & Large Urban	35,511,175
5310 – Enhanced Mobility of Seniors & Individuals w/ Disabilities	1,169,224
5311 – Rural	558,478
5311 (f) – Intercity	139,001*
Total	**37,377,878**

*Source: DOTD, 2015 Public Transit Data. *FY 2013 – Service discontinued in FY 2014*

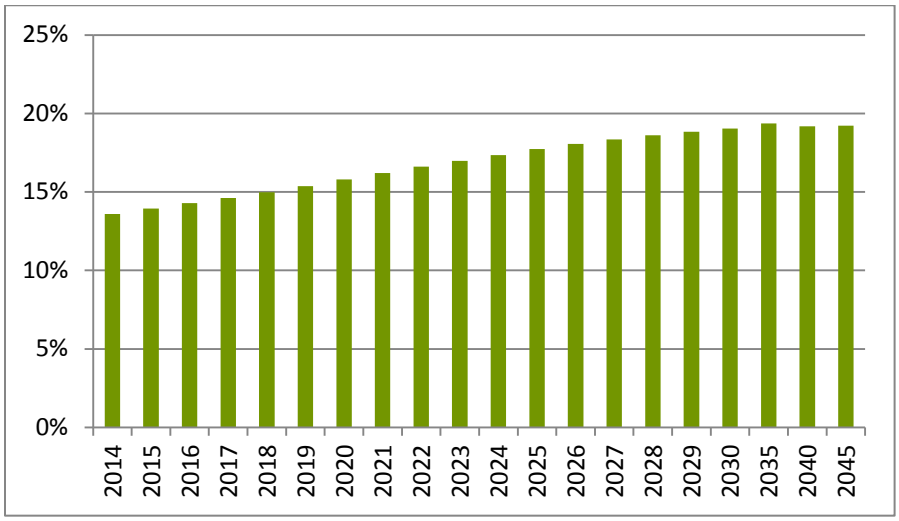
As noted, many FTA programs are administered by DOTD's Public Transportation Section. While some federal monies are distributed on a discretionary basis, many programs use formula distribution, using factors such as population, transit usage, and other characteristics.

Public transit is provided in both urban and rural areas of the state. Currently 43 parishes have urban and/or rural transit service, which includes FTA 5307 or 5311 funding. Thirteen parishes have urban and small urban transit service, 35 parishes have rural transit services, and five parishes have both urban and rural transit services available for residents. Twenty-one parishes do not have general public transit service.

Currently 85 transit and human services agencies are funded by the FTA 5310 program, serving elderly and disabled residents of Louisiana. The FTA 5311 program provides funding for 36 transit agencies in rural areas. Three Louisiana parishes (Grant, Morehouse, and Tensas) do not have FTA 5307 or FTA 5311 general public transit service; FTA 5310 elderly and disabled services also are not available.

As is true of the U.S. as a whole, the Louisiana population's median age is expected to increase in the decades ahead. Currently, 13.5 percent of the State's population is 65 years of age or older. By 2045, the percentage is expected to exceed 19.2 percent (**Figure 4-28**). The aging population is likely to create an increase in demand for transportation services to access health services, as well as for recreational and everyday activities.

Figure 4-28: Forecast Percentage of Louisiana Population, Age 65 and Over



Source: Woods and Poole 2015

4.7.3 Urban Transit

The FTA Section 5307 program (urbanized area formula grants) provides public transportation capital investments and operating expenses in urban areas. Grants are available to finance the acquisition, construction, cost-effective leasing, maintenance, planning, and improvement of facilities and equipment for use by operation, lease, contract, and to assist with the payment of operating expenses to improve or to continue public transit. The small, medium, and large urban areas with reporting requirements to the National Transit Database (NTD)[7]are listed in **Table 4-26**.

Table 4-26: Urban Area Transit Providers

Area	Agency
Alexandria	City of Alexandria (ATrans)
Baton Rouge	Capital Area Transit System (CATS)
Chalmette	St. Bernard Urban Rapid Transit (SBURT)
Gretna	Jefferson Parish Department of Transit Administration (JeT)
Houma	Terrebonne Parish Consolidated Government (Good Earth Transit) – South Central Planning & Development Commission (SCPDC)
LaPlace	River Parishes Transit Authority (RPTA)
Lafayette	Lafayette Transit System (LTS)
Lake Charles	Lake Charles Transit System (LCTS)
Mandeville	St. Tammany Parish Govt. (goSTAT)
Monroe	City of Monroe Transit System (MTS)
New Orleans	New Orleans Regional Transit Authority (RTA)
Shreveport	Shreveport Area Transit System (SporTran)

4.7.4 Elderly and Persons with Disabilities Transit

Section 5310 (enhanced mobility of seniors and individuals with disabilities) provides financial assistance for meeting the transportation needs of the elderly and people with disabilities where public

[7] *FTA grant recipients provide condition and performance data that is organized in the NTD.*

transportation services are unavailable, insufficient, or inappropriate in all geographic areas – urbanized, small urban, and rural. The funds are often used to purchase vehicles equipped with wheelchair lifts. This grant provides up to 85 percent of the purchase price of the equipment. Private nonprofit organizations and public agencies providing services to elderly and disabled individuals are eligible to apply for the program funds.

Ridership has declined over the past 5 years from 2.2 million annual passenger trips for 5310 human service provider agencies in FY 2011 to 1.2 million in FY 2014 (**Table 4-27**). Increasing costs have contributed to this decline. DOTD, through the FTA 5310 program, has provided capital assistance to 88 transit agencies statewide over the past 5 years.

Table 4-27: FTA 5310 Program Ridership and Expenses

Fiscal Year	FTA 5310 Total Ridership	FTA 5310 Total Capital Expenses
2006/2007	2,200,022	$1,065,026
2007/2008	2,197,121	$2,969,878
2008/2009	2,197,333	$1,955,467
2009/2010	2,187,475	$1,749,742
2010/2011	2,201,680	$1,876,958
2011/2012	1,710,000	$1,994,484
2012/2013	1,306,356	$2,148,486
2013/2014	1,169,224	$1,942,230

Source: DOTD, 2015 Public Transit Data

4.7.5 Rural Transit

Section 5311 (the Rural Public Transportation Program) provides grant funds to transit agencies that provide public transportation services in non-urbanized areas. Operating grants are available and provide up to 50 percent reimbursement of net operating expenses. Capital grants can be used to purchase vehicles, wheelchair lifts, and related support equipment. These grants provide up to 85 percent of the purchase price of the equipment. Current ridership is around 560,000 annual trips, supported by $6.1 million of funding (**Table 4-28**).

Table 4-28: FTA 5311 Program Ridership and Budget

Fiscal Year	FTA 5311 Total Ridership	FTA 5311 Total Operating Budget
2007	779,009	$6,554,785
2008	788,526	$5,787,293
2009	878,105	$6,214,438
2010	732,323	$7,568,056
2011	732,323	$7,568,056
2012	589,675	$6,625,701
2013	595,047	$6,821,315
2014	558,478	$6,125,915

Source: DOTD, 2015 Public Transit Data

4.7.6 Intercity Transit

Intercity transit is provided by private carriers, such as Greyhound and Megabus. There are 14 Greyhound stations (plus one limited service stop) throughout Louisiana. Megabus has stations in Baton Rouge and New Orleans. From 2006 to 2013, the LA Swift Intercity Bus Service provided transportation between Baton Rouge and New Orleans. In July 2013, the LA Swift Service was discontinued because of a lack of local match funding. In June, 2015, Greyhound initiated bus service between New Orleans and Baton Rouge, and between New Orleans and Houma, using FTA (section 5311 (f)) funding.

4.7.7 Passenger Rail

Amtrak operates three long-distance intercity rail passenger services in Louisiana, and those operations within Louisiana represent only a portion of the total service area of the operations. Intercity rail between Baton Rouge and New Orleans has yet to be implemented. Should it happen, it will likely be sponsored by the local jurisdictions served rather than by DOTD.

The state is served by three long-distance Amtrak trains, centered in New Orleans. Currently, no commuter or intercity corridor passenger rail service is provided in the state, either by Amtrak or other operators. Amtrak operates entirely over the trackage of Class I freight railroads, except for the trackage at New Orleans Union Passenger Terminal. Amtrak has provided a constant level of long-distance service, with no recent increases in the frequency of service.

Seven Louisiana train stations served 245,502 passengers during calendar 2011. New Orleans had the highest ridership, with over 86 percent of the trips; the Hammond station was the second highest, with 6 percent of the total annual ridership.

- *Crescent* – Amtrak's long-distance Crescent service operates between New York and New Orleans. The 1,377-mile service includes one daily round-trip, stopping at Slidell in Louisiana before terminating in New Orleans. Intermediate stops outside Louisiana include Birmingham; Atlanta; Charlotte; Washington, D.C.; Baltimore; and Philadelphia. In FY 2011, ridership was 304,100.

- *City of New Orleans* – This train operates daily between Chicago and New Orleans, a distance of 926 miles. The service consists of one daily round-trip, stopping at Hammond in Louisiana before terminating in New Orleans. Intermediate stops outside Louisiana include Champagne-Urbana, Carbondale, Fulton, Memphis, and Jackson. In FY 2011, ridership was 233,300.

- *Sunset Limited* – The Sunset Limited operates on a tri-weekly schedule between Los Angeles and Orlando (1,995 miles), serving major intermediate stations at Phoenix, Tucson, El Paso, San Antonio, and Houston. In FY 2011, ridership was 99,700.

4.8 Bicycle and Pedestrian

The role of bicycle and pedestrian transportation in Louisiana and at the DOTD has changed greatly since the 2003 Plan was completed. An increase in bicycle and pedestrian crashes and injuries, an increase in obesity rates for adults and children, and an increase in environmental stewardship have all contributed to an enhanced awareness of safe access to alternative modes of transportation.

DOTD's role in the bicycle and pedestrian modes is as a partner – the Department shares responsibility with other entities in decision-making, training, and funding. Municipalities look to the DOTD for leadership in design standards, model programs, and coordination of activities at a statewide and national level. Specific projects and associated funding identified in this Plan are intended to be undertaken as a partnership between, federal, state, and local governments. Historically the DOTD has administered competitive grant programs, such as Transportation Alternatives (formerly Transportation Enhancements) funding.

Photo: New Orleans RPC

From a health and wellness perspective, supporting walking and bicycling is a critical issue. With an obesity rate of 33% in 2013, Louisiana has the sixth highest adult obesity rate in the nation, according to The State of Obesity: Better Policies for a Healthier America 2014 by the Trust for America's Health and Robert Wood Johnson Foundation. Walking and bicycling for transportation, recreation and exercise are both very simple activities to aid in fighting this challenge.

While walking and bicycling account for a small percentage of commute trips, they account for a high number of shorter, non-work trips in denser urban areas. A safe, supportive walking/bicycling environment contributes greatly to a community's quality of life, health, and livability. The walking and bicycling discussion focuses on policies and programs to enhance these modes. Some recent relevant legislation includes:

- In 2010, the state legislature passed Senate Concurrent Resolution 110, which requested that the DOTD to form a working group to create a complete streets policy. Act 470 was enacted in 2014 directing the DOTD to engage interested stakeholders through the Complete Street Advisory Council.

- The FHWA made Louisiana a "focus" state for traffic safety and the City of New Orleans a "focus" city for pedestrian safety. In 2011, the state completed its first SHSP with pedestrian safety a focus area. As a result of the State's safety programs and implementation of the complete streets policy, the Louisiana received the Safety Leadership Award by the American Association of State Highway and Transportation Officials (AASHTO) Standing Committee on Highway Traffic Safety.

- Revised Statue 32:76.1 was enacted in 2010. Limitations on passing bicycles, also known as the Colin Goodier 3-Foot Law, make it unlawful for motorists to overtake bicyclists without providing a 3-foot distance between the motorist and bicyclist. In addition Revised Statute 32:283 was enacted in 2010 governing the improper opening or leaving open of vehicle doors that endanger passing bicyclists.

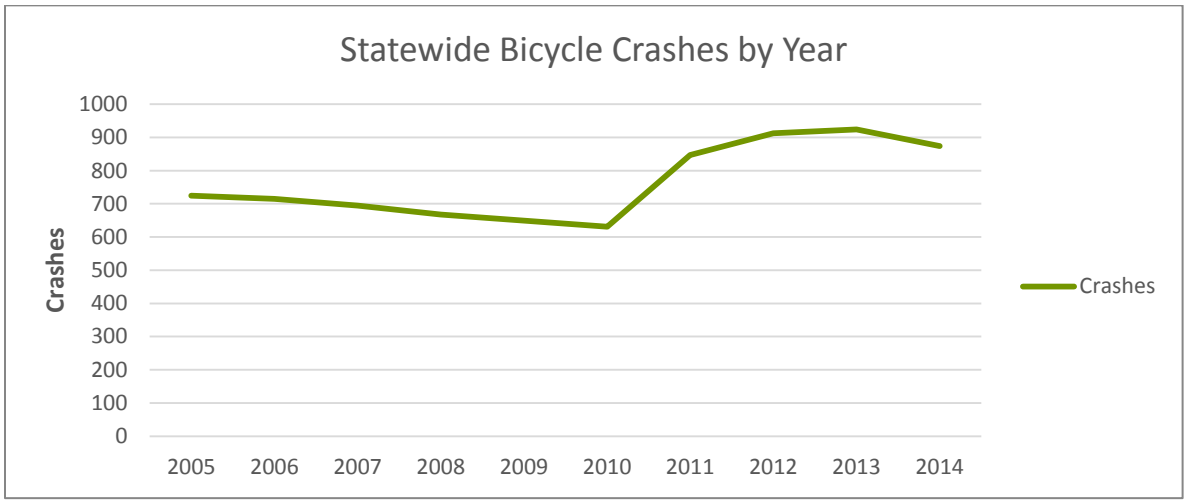
- Passed in 2010, Act 840 establishes a pedestrian safety trust fund and creates a specialty "Share the Road" license plate, with proceeds supporting this trust fund.

- Act 618, enacted in 2010, authorizes the DOTD to include appropriate bicycle facilities on all new construction projects. If excluded, the reasons must be documented.

4.8.1 Bicycle Safety

In 2005, the state experienced 725 bicycle crashes. For the next 5 years, bicycle injuries steadily declined to 631 in 2010. They then rose sharply during the next 3 years to 924 in 2013 and slightly declined in 2014 (**Figure 4-29**).

Figure 4-29: Statewide Bicycle Crashes by Year, 2005 to 2014

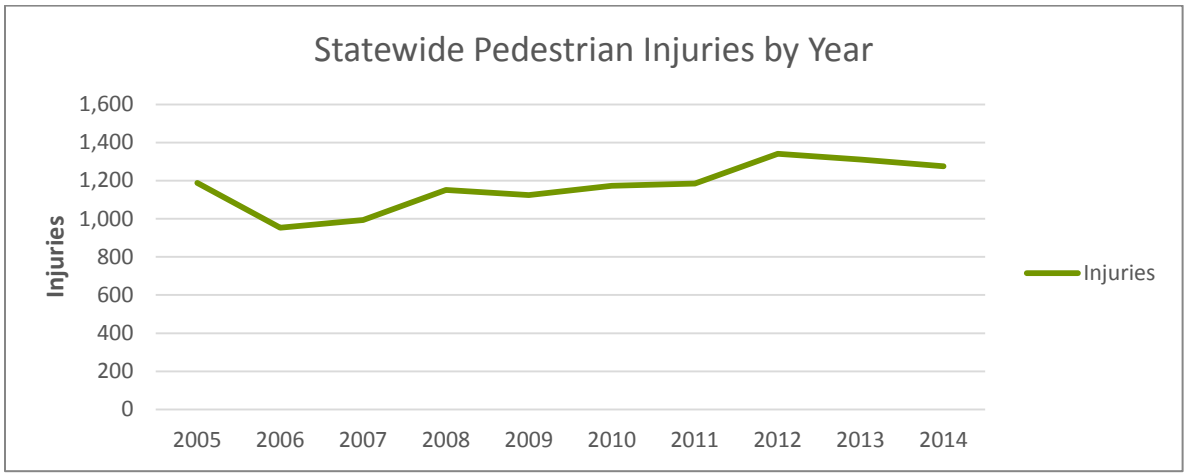


Source: Louisiana State University – Highway Safety Research Group, Louisiana Crash Data Reports, 2015.

4.8.2 Pedestrian Safety

In 2005, Louisiana had 1,188 pedestrian injuries. In 2012, pedestrian injuries rose to 1,342, the peak number in the 10-year period. Since 2012, pedestrian injuries have declined (**Figure 4-30**).

Figure 4-30: Statewide Pedestrian Crashes by Year, 2005 to 2014



Source: Louisiana State University – Highway Safety Research Group, Louisiana Crash Data Reports, 2015.