

**Summary Report #2 (Tasks 4-5)
2016 Alabama Statewide Freight Plan**

Table of Contents

1.0	Introduction	3
2.0	Key Freight Considerations.....	4
3.0	FAF3 and the Statewide Freight Model	4
	<i>Figure 1: Freight Model Development Process</i>	<i>5</i>
	<i>Figure 2: FAF3 Zones.....</i>	<i>5</i>
	<i>Figure 3: FAF Zonal Structure for Alabama Statewide Model (US).....</i>	<i>7</i>
	<i>Figure 4: FAF Zonal Structure for Alabama Statewide Model (Alabama)</i>	<i>7</i>
	<i>Figure 5: Statewide Freight Model</i>	<i>8</i>
4.0	Overall Statewide Freight Infrastructure.....	9
4.1	Roadway Network	9
	<i>Figure 6: Major Roadways and Railways throughout Alabama</i>	<i>9</i>
	<i>Figure 7: Draft 2016 Alabama Primary Freight Network</i>	<i>10</i>
4.2	Railway Network.....	11
4.3	Ports, Airports, and Pipelines	11
	<i>Table 1: Port Facilities in Alabama</i>	<i>11</i>
	<i>Figure 8: Liquids Pipelines.....</i>	<i>12</i>
	<i>Figure 9: Natural Gas Pipelines.....</i>	<i>13</i>
4.4	Intermodal Connectivity	14
	<i>Figure 10: Draft 2016 Alabama Known Intermodal Connectors</i>	<i>15</i>
5.0	Baseline Conditions and Base Year Commodity Flow Results.....	16
5.1	Truck Commodity Flow	16
	<i>Figure 11: Commodities Originating in Alabama by Truck</i>	<i>17</i>
	<i>Figure 12: Commodities Terminating in Alabama by Truck</i>	<i>17</i>
	<i>Figure 13: Commodity Flow through Alabama by Truck</i>	<i>18</i>
	<i>Table 2: Top 10 Commodities by Region by Truck</i>	<i>19</i>
5.2	Rail Commodity Flow	19
5.2.1	Birmingham Area.....	19
	<i>Figure 14: Commodities Originating in Birmingham by Rail</i>	<i>20</i>
	<i>Figure 15: Commodities Terminating in Birmingham by Rail.....</i>	<i>20</i>
5.2.2	Mobile Area	21
	<i>Figure 16: Top Commodity Flows Originating in the Mobile Area by Rail.....</i>	<i>21</i>
	<i>Figure 17: Top Commodity Flows Terminating in the Mobile Area by Rail</i>	<i>21</i>
5.2.3	Northeast Alabama Area	22
	<i>Figure 18: Top Commodity Flows Originating in Northeast Alabama by Rail</i>	<i>22</i>
	<i>Figure 19: Top Commodity Flows Terminating in Northeast Alabama by Rail.....</i>	<i>22</i>
5.2.4	Southeast Alabama Area	23
	<i>Figure 20: Top Commodity Flows Originating in Southeast Alabama by Rail</i>	<i>23</i>
	<i>Figure 21: Top Commodity Flows Terminating in Southeast Alabama by Rail.....</i>	<i>23</i>

Summary Report #2 (Tasks 4-5)
2016 Alabama Statewide Freight Plan

Table of Contents (continued)

5.2.5	Southwest Alabama Area	24
	<i>Figure 22: Top Commodity Flows Originating in Southwest Alabama by Rail</i>	<i>24</i>
	<i>Figure 23: Top Commodity Flows Terminating in Southwest Alabama by Rail</i>	<i>24</i>
5.2.6	Northwest Alabama Area	25
	<i>Figure 24: Top Commodity Flows Originating in Northwest Alabama by Rail</i>	<i>25</i>
	<i>Figure 25: Top Commodity Flows Terminating in Northwest Alabama by Rail</i>	<i>25</i>
5.3	Waterways Other than the Port of Mobile	26
	<i>Figure 26: Commodity Flows by Water Originating in Alabama Ports Other than Mobile</i>	<i>26</i>
	<i>Figure 27: Commodity Flows by Water Terminating in Alabama Ports Other than Mobile.....</i>	<i>26</i>
5.4	Air Commodities	27
	<i>Figure 28: Commodity Flows by Air Originating in Alabama.....</i>	<i>27</i>
	<i>Figure 29: Commodity Flows by Air Terminating in Alabama</i>	<i>27</i>
5.5	Pipeline Commodities.....	28
	<i>Figure 30: Commodity Flows by Pipeline Originating in Alabama.....</i>	<i>28</i>
	<i>Figure 31: Commodity Flows by Pipeline Terminating in Alabama</i>	<i>28</i>
6.0	Freight Network Evaluation Framework	29
6.1	Goals and Performance Measure Development Process.....	29
6.2	Initial Performance Measures	30
	<i>Table 3: Initial Freight Plan Performance Measures</i>	<i>31</i>
7.0	Major Findings and Next Steps	32

Summary Report #2 (Tasks 4-5)

2016 Alabama Statewide Freight Plan

1.0 Introduction

This interim delivery summarizes activities conducted to date under Tasks 4 and 5 of the scope of work to develop the 2016 Alabama Statewide Freight Plan (Freight Plan) for the Alabama Department of Transportation (ALDOT). These tasks, as outlined in the scope of services, are as follows:

Task 4: Determine and define the statewide freight network, to include all modal and intermodal elements of the various systems.

Task 5: Develop a statewide freight improvement strategy. This strategy should include any Freight Performance Measures levied as requirements on the state DOTs by FHWA and as published in the Federal Register.

The scope of services outlines this interim deliverable as follows:

Summary Report 2: Assessment of all existing networks, and recommendations for a modal/intermodal plan development strategy. (Tasks 4-5)

This document, Summary Report #2, serves as the second deliverable in the development of the Freight Plan. Summary Report #1 identified the mission, vision, and goals; provided a detailed description of the federal guidelines regarding freight policy and emphasis areas for freight planning; and detailed the public involvement process to be undertaken in the planning process. In addition, the statewide freight modeling process was outlined, and a snapshot of Alabama's 2012 freight flow characteristics was presented.

The purpose of this report is to document the baseline conditions for freight and the framework for which freight mobility will be evaluated throughout the state of Alabama. As such, this report addresses all modes of freight movement, including roadway, rail, waterway, air and pipeline. This report provides:

- An overview of the key considerations used to monitor and plan for freight
- A description of the information used to develop the overall baseline analysis, including input from stakeholders
- A profile of the multimodal statewide freight network, including its connectivity to major freight generators
- A description of the freight flows by mode
- An overview of the factors that influence the development of performance measures for freight
- A list of next steps in the development of the Statewide Freight Plan

The information presented herein will be used to finalize the Statewide Primary Freight Network (PFN), identify the greatest freight needs, and develop an overall improvement strategy to increase freight mobility throughout the state.

Summary Report #2 (Tasks 4-5)

2016 Alabama Statewide Freight Plan

2.0 Key Freight Considerations

The Freight Plan is a multimodal document. However, it is important to remember that the non-roadway modes are largely controlled by the private sector. The following presents the primary freight related considerations and how they are addressed:

- Congestion Reduction/Mobility Preservation – An overview of the level of traffic and truck percentages along Alabama’s roadways is presented. By comparing these characteristics to the location of freight chokepoints throughout the state (to be determined later in the study), the areas in need of freight congestion relief will be identified.
- Infrastructure Condition – Simply stated, truck traffic generally creates more maintenance needs than the average passenger automobile, primarily due to the greater vehicle weights. Identifying facilities that carry higher levels of truck traffic will help ALDOT and other implementing agencies to prioritize their maintenance needs.
- Economic Competitiveness – Input will be collected from public and private sector stakeholders continuously throughout the plan development process to assist in understanding how freight infrastructure and improvements can better facilitate economic vitality and growth in Alabama. The modal analyses contained herein will also help identify intermodal connectivity opportunities.
- Safety – The identification of potential safety conflicts and congestion chokepoints throughout the state is an important first step toward increasing the overall safety of the roadway network.
- Innovative Operational Improvements – Assessing how new technologies can be integrated into the planning process will be a key outcome of the Freight Plan. Understanding factors such as intermodal connectivity and freight chokepoints will support the strategic implementation of ITS strategies.
- Environmental Sustainability/Environmental Justice – Consistent with federal guidelines, the initial performance measures presented in this report are a means to evaluate the network for environmental factors, including conformance with environmental justice policies. More information on environmental justice can be found in Summary Report #1.

3.0 FAF3 and the Statewide Freight Model

The statewide freight modeling process, outlined in Figure 1, relies as its primary data source on the Freight Analysis Framework Version 3.5 (FAF3) produced by the Federal Highway Administration (FHWA). FAF3 contains freight movement data for the United States taken from the Commodity Flow Survey and additional economic and mode specific databases. The FAF3 freight flow data is presented for large aggregated zones totaling 123 zones nationwide, with Alabama comprised of three zones: 1) Birmingham area, 2) Mobile area, and 3) remainder of the state. Figure 2 shows the FAF3 zones. The data presented in FAF3 are broken out by seven modes of transport and further classified by 43 commodities. Summary Report #1 presented an overview of the FAF3 data for the entire state and its three zones.

Summary Report #2 (Tasks 4-5) 2016 Alabama Statewide Freight Plan

Figure 1: Freight Model Development Process

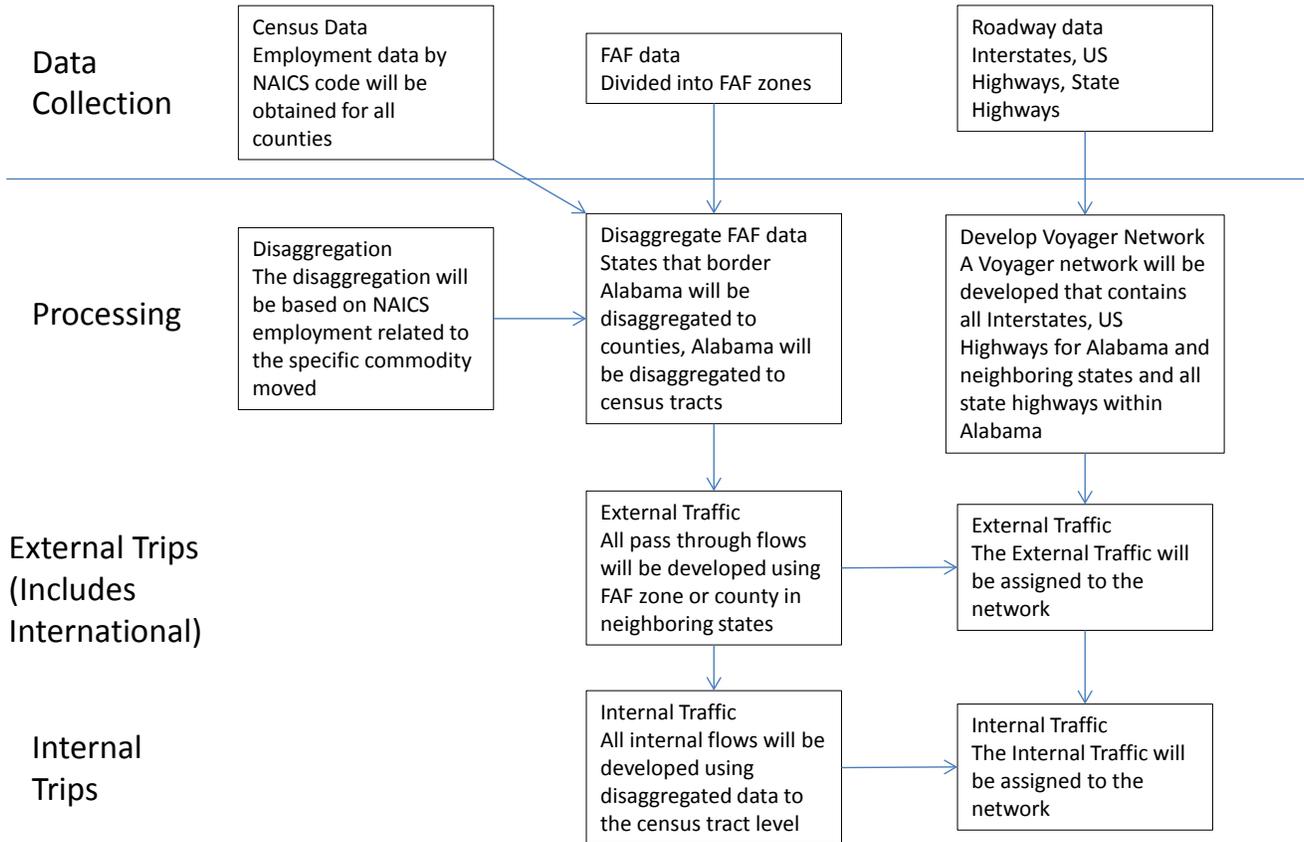
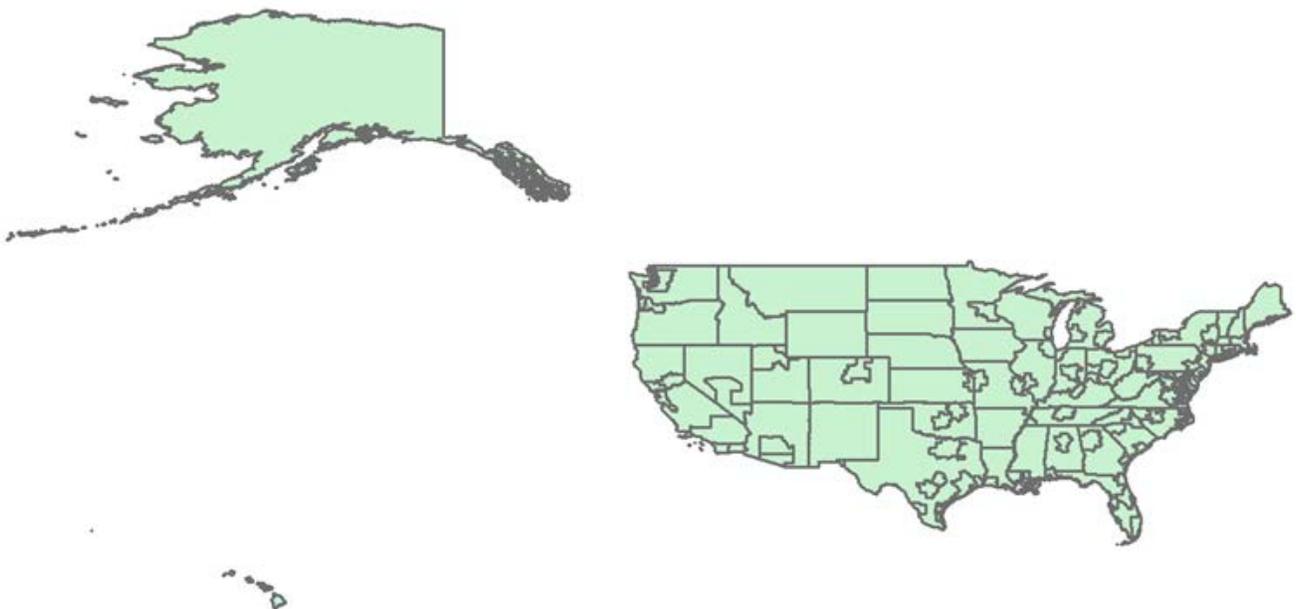


Figure 2: FAF3 Zones



Summary Report #2 (Tasks 4-5)

2016 Alabama Statewide Freight Plan

The modeling process will focus on the disaggregation of FAF3 data into county and census tracts using employment data obtained from the Business Census. The roadway network will be developed using Interstates, US Highways and Alabama Highways. The individual commodities will be assigned to the network independently and aggregated to determine the total freight volume projected for each roadway.

The FAF3 data represent flows greater than 50 miles, which is at an appropriate level for a statewide freight model. However, the resulting lack of detail within urban areas limits the ability to effectively reflect all freight movement within a community.

This report discusses the process of disaggregating the three-zone level data to a more detailed level for use in a statewide model. It must be mentioned that this disaggregation and specific modeling effort were truck focused, as this mode provides direct access between shippers and receivers and is not a terminal to terminal movement, as indicative of the other modes. The disaggregation of the truck flow data to the more detailed level was performed using a disaggregation procedure developed in the previous statewide freight plan, where the employment characteristics of a county were used as the primary disaggregation variable.

Specific to the Alabama model, the employment data at the county level, by NAICS code, were collected for Alabama and all the states that border Alabama: Georgia, Florida, Mississippi and Tennessee. The employment data was used to disaggregate the freight tonnage based on the employment in the county that most likely had direct influence over the freight being moved in a specific commodity. Using commodity 25 Logs as an example, the freight generated by a county was a portion of the total freight generated by the region. That portion was determined according to the total employment in the county related to logging, forest nurseries and timber tract operation as a percentage of the total employment in the FAF3 zone for those same industries. This process was applied to each of the 43 commodities to determine the contribution of flow for each county in Alabama and each county in a state that bordered Alabama.

To further refine the structure, within Alabama and those counties in neighboring states that were within 25 miles of Alabama, the data were further disaggregated to the census tract level using total employment of the census tract as a portion of total employment in the county as the disaggregation factor. Unfortunately, there was no way to differentiate the employment by NAICS code at the sub-county level. The chart that shows the commodity crosswalk between NAICS code and FAF3 commodity is shown in Appendix A.

Therefore, the zone structure for the Alabama statewide model is based on a three tiered system – 1) US Census tracts for the state of Alabama and counties within 25 miles of Alabama; 2) counties for the states that boarder Alabama and 3) FAF3 zone for everywhere else in the country. Figure 3 shows the zones structure for the nation, and Figure 4 shows the zone structure closer to Alabama.

Summary Report #2 (Tasks 4-5)
2016 Alabama Statewide Freight Plan

Figure 3: FAF Zonal Structure for Alabama Statewide Model (US)

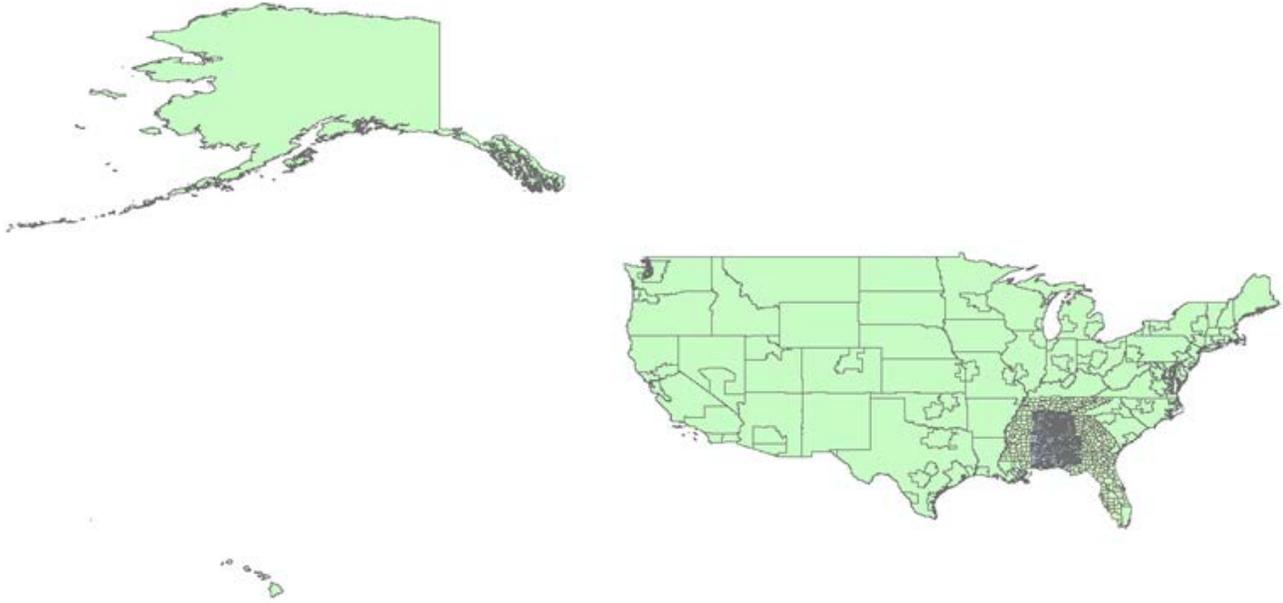
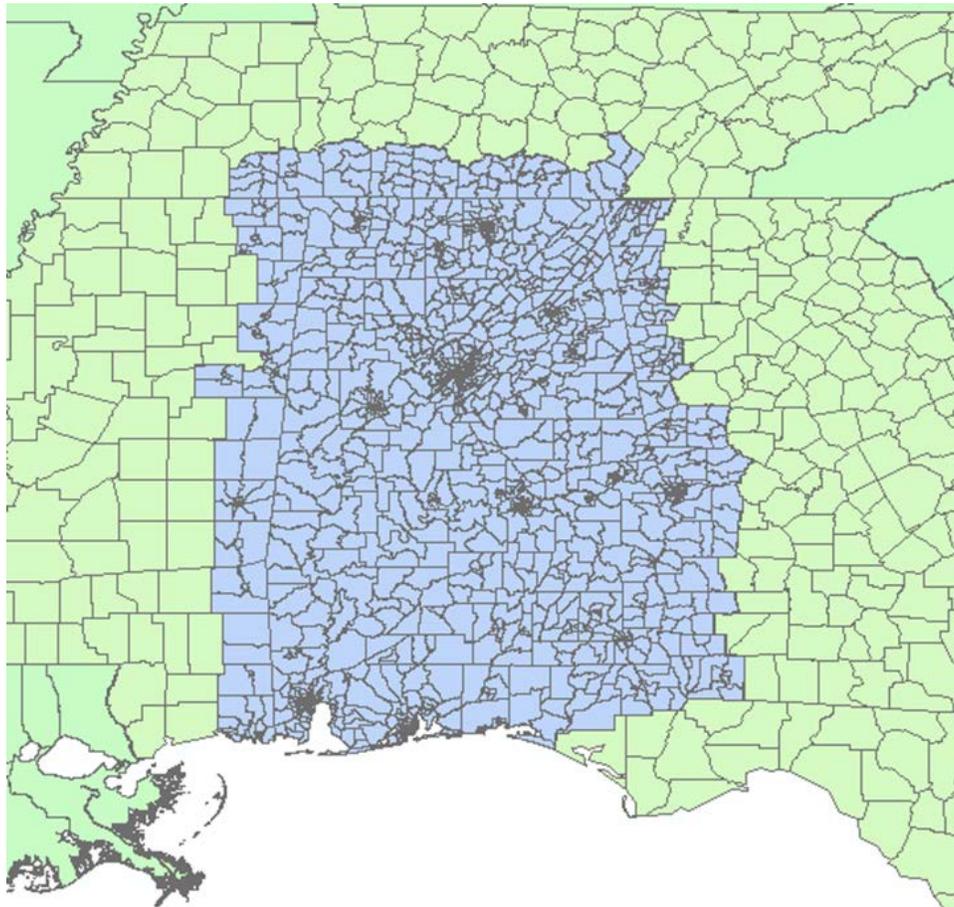


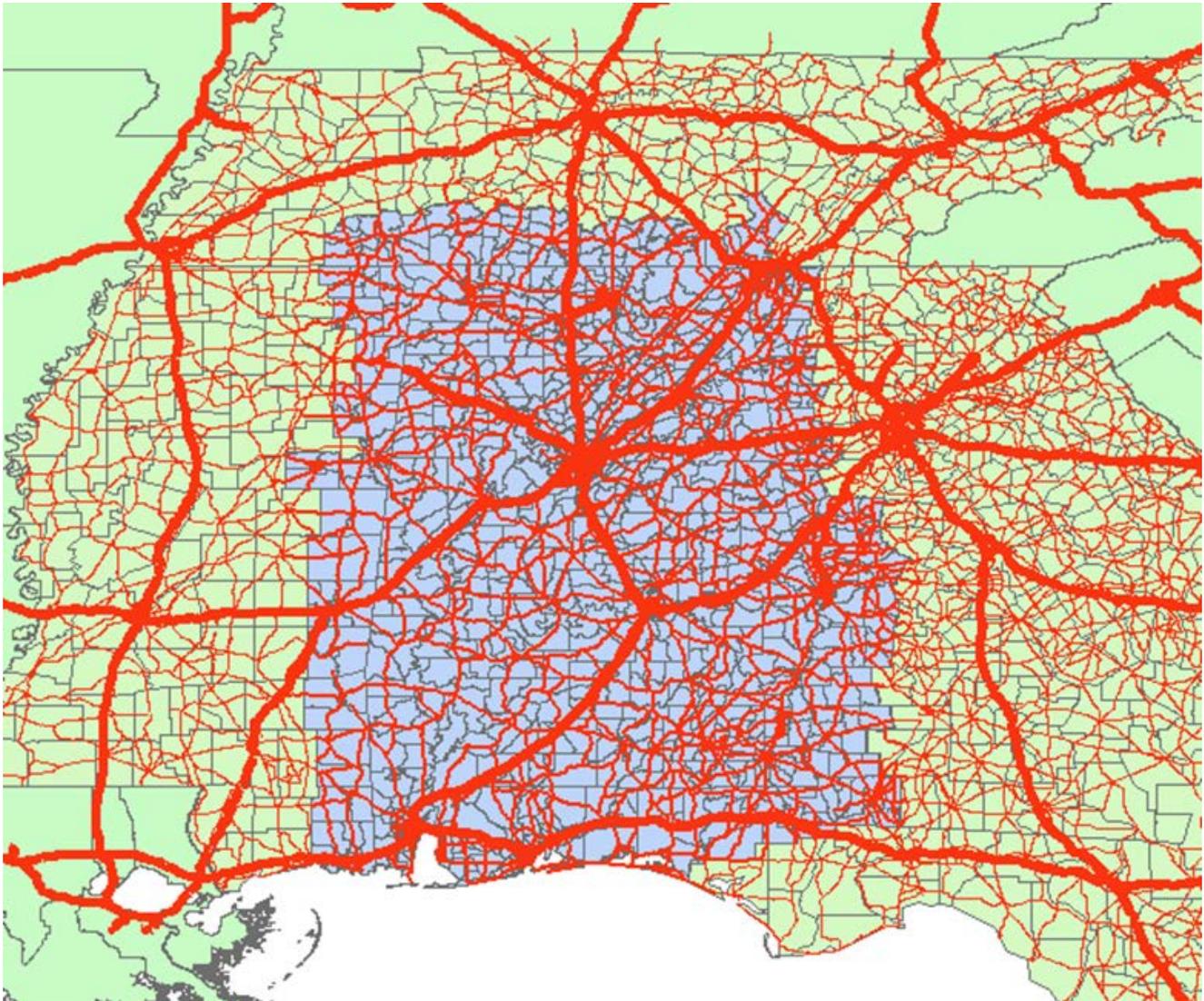
Figure 4: FAF Zonal Structure for Alabama Statewide Model (Alabama)



Summary Report #2 (Tasks 4-5) 2016 Alabama Statewide Freight Plan

The roadway network for the statewide model is based on the Interstate system and state highway system for Alabama. As with the zones, there is a hierarchy structure that takes into account the distance from and importance to Alabama. Further away from Alabama, only the interstates are used in the model. The roadways are all attributed with speed limit, distance, and travel time. The roadways are not attributed with capacity as the model does not assume capacity limitations. This is due to the limited number of roadways and alternate routes. The network is shown in Figure 5.

Figure 5: Statewide Freight Model



It is important to recognize that the roadways in the statewide model are limited, and a majority of the roadways in an urban model maintained by an MPO are absent from the statewide model. This is necessary because of the limited data available from the FAF3 regarding trips less than 50 miles or delivery trips within an urban area. Additionally, the statewide model is not intended to accurately predict truck traffic on each roadway within a particular urban area, but to be a tool for determining the appropriate magnitude of the truck traffic on the fringe of an MPO boundary.

Summary Report #2 (Tasks 4-5) 2016 Alabama Statewide Freight Plan

4.0 Overall Statewide Freight Infrastructure

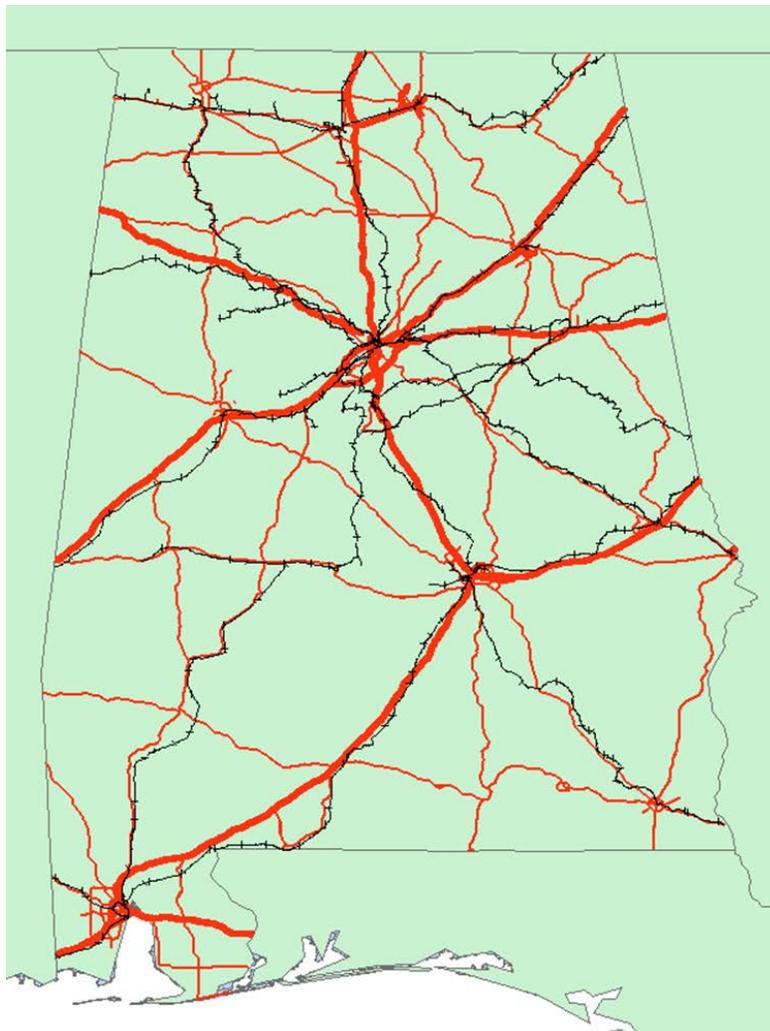
The multimodal freight network throughout the state consists of major roadways, railways, waterways, airports and pipelines. Of these modes, the vast majority of commodities are transported by truck and rail.

4.1 Roadway Network

The major roadway network consists of five interstate highways and an extensive network of federal and state routes (see Figure 6). During its efforts to define a National Freight Network, FHWA designated all of the interstates within the state as part of the national network, with the exception of I-59 from Birmingham to Chattanooga and the soon to be completed I-22 from Birmingham to Memphis.

In 2015, ALDOT staff expanded on the National Freight Network to identify a Draft Primary Freight Network for Alabama to include all major highways (including I-59 and I-22) and other important freight corridors. This draft network is shown in Figure 7. Following the identification of existing and projected freight flows and major freight connectivity needs throughout the state later in this planning effort, the initial Draft Primary Freight Network will likely be expanded to include some of the other roadways shown in Figure 6.

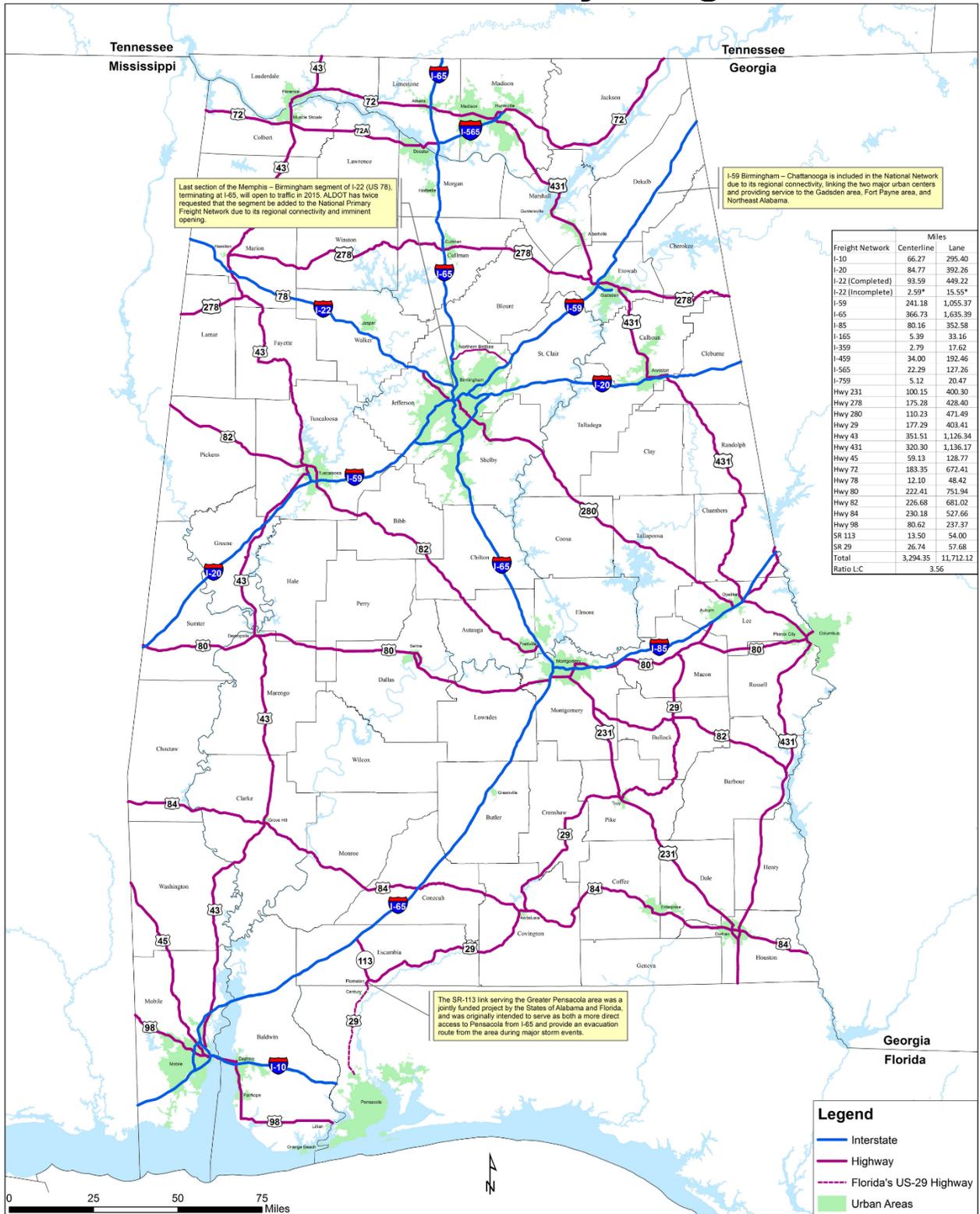
Figure 6: Major Roadways and Railways throughout Alabama



**Summary Report #2 (Tasks 4-5)
2016 Alabama Statewide Freight Plan**

Figure 7: Draft 2016 Alabama Primary Freight Network

Draft 2016 Alabama Primary Freight Network



Map by ALDOT Metropolitan Planning - 4/6/2015

Based on 2010 Census Data

Summary Report #2 (Tasks 4-5) 2016 Alabama Statewide Freight Plan

4.2 Railway Network

The rail network in Alabama consists of 3,973 freight rail miles operated by 28 Class I, II and III railroads, although most of the freight is carried on the Class I network. Four Class I railroads have a presence in Alabama—Burlington Northern Santa Fe (BNSF), Canadian National Illinois Central (CN/IC), CSX Transportation (CSXT), and Norfolk Southern (NS). The Class I rail lines account for approximately 72 percent of track mileage in Alabama. The rail lines in Alabama operated by Class I railroads are shown on Figure 6.

4.3 Ports, Airports, and Pipelines

The most significant freight facility in Alabama is the Port of Mobile. There are 18 other ports throughout the state, all of which are river ports and most very small. The Alabama State Port Authority operates 11 of these ports. Most freight is transported along the Tombigbee and Tennessee Rivers. Table 1 identifies all Alabama ports, including location and operator.

Table 1: Port Facilities in Alabama

Name	Port Authority	City
Bevill-Hook Port	Aliceville Industrial Development Board	Aliceville, AL
Crossroads of America Port	Greene County Economic and Industrial Board	Boligee, AL
Port of Bridgeport	Alabama State Port Authority	Bridgeport, AL
Barry Electric Generating Plant	AL Power	Bucks, AL
Port of Claiborne	Alabama State Port Authority	Claiborne, AL
Port of Columbia	Alabama State Port Authority	Columbia, AL
Port of Cordova	Alabama State Port Authority	Cordova, AL
Port of Decatur	Decatur Transit, Inc.	Decatur, AL
Port of Demopolis	Alabama State Port Authority	Demopolis, AL
Port of Epes	Industrial Board of Sumter County	Epes, AL
Port of Eufaula	Alabama State Port Authority	Eufaula, AL
Port of Florence	Florence - Lauderdale County Port Authority	Florence, AL
Port of Guntersville	American Commercial Barge Line	Guntersville, AL
Port of Mobile	Alabama State Port Authority	Mobile, AL
Port of Montgomery	Alabama State Port Authority	Montgomery, AL
Port of Phoenix City	Alabama State Port Authority	Phoenix City, AL
Pickens County Port	Pickens County Port Authority	Pickensville, AL
Port of Selma	Alabama State Port Authority	Selma, AL
Port of Tuscaloosa	Alabama State Port Authority	Tuscaloosa, AL

Source: World Port Source

Most of the air freight is transported via the state’s major airports in Birmingham, Mobile, Montgomery, Huntsville and Tuscaloosa.

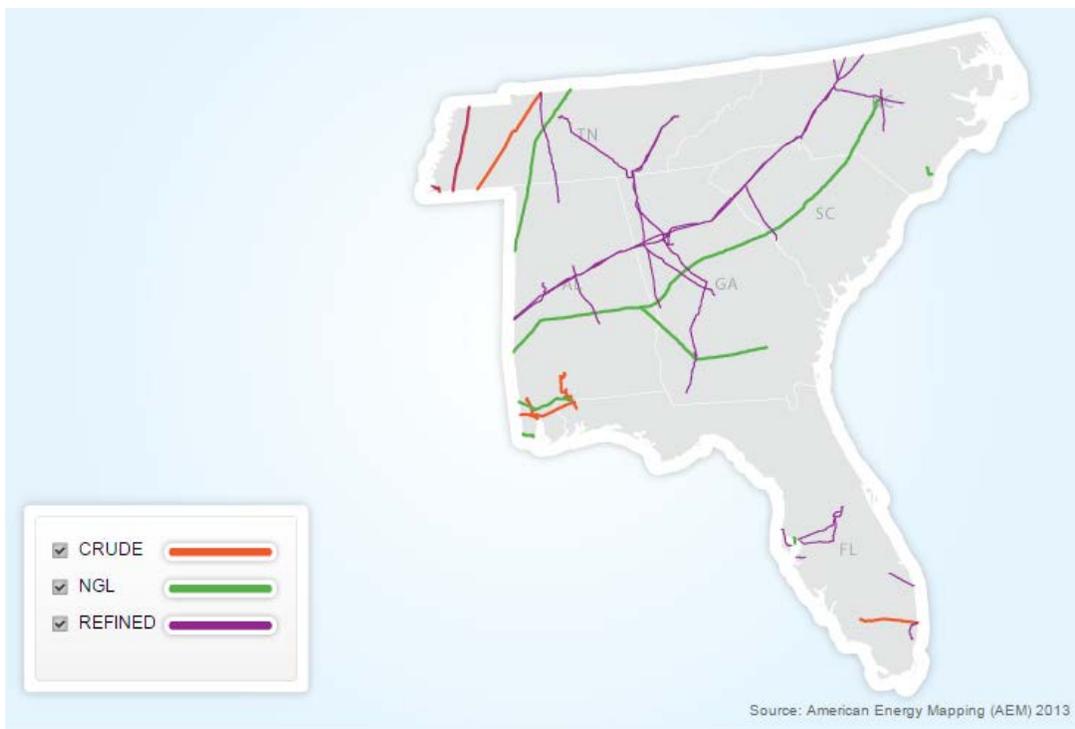
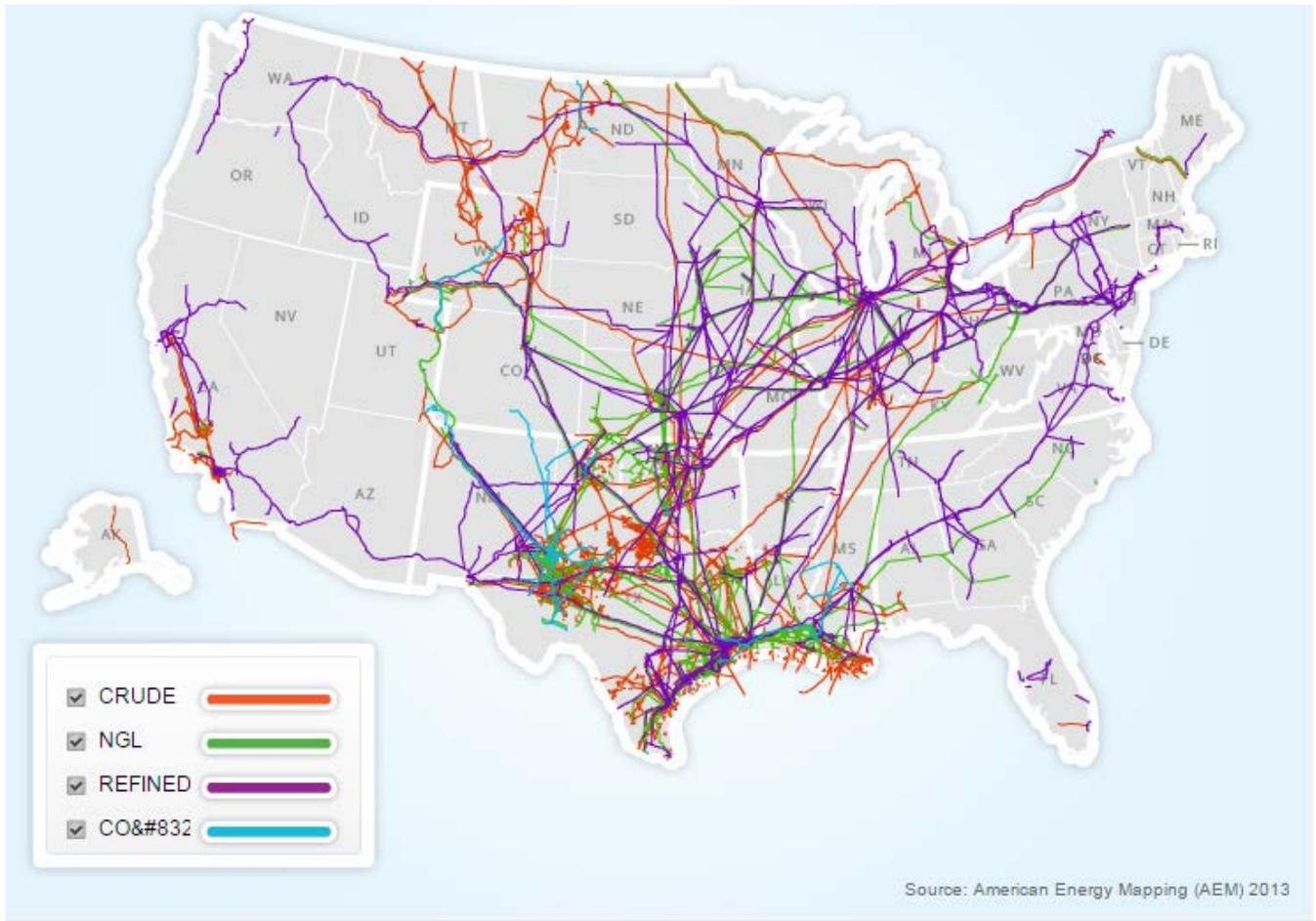
The location of pipelines, which are wholly owned by the private sector, are shown on Figures 8 and 9. More information about pipelines, and the original versions of these maps, can be found at the following links:

<http://www.pipeline101.com/where-are-pipelines-located>

<http://www.pipeline101.com/where-are-pipelines-located/natural-gas-pipelines-map>

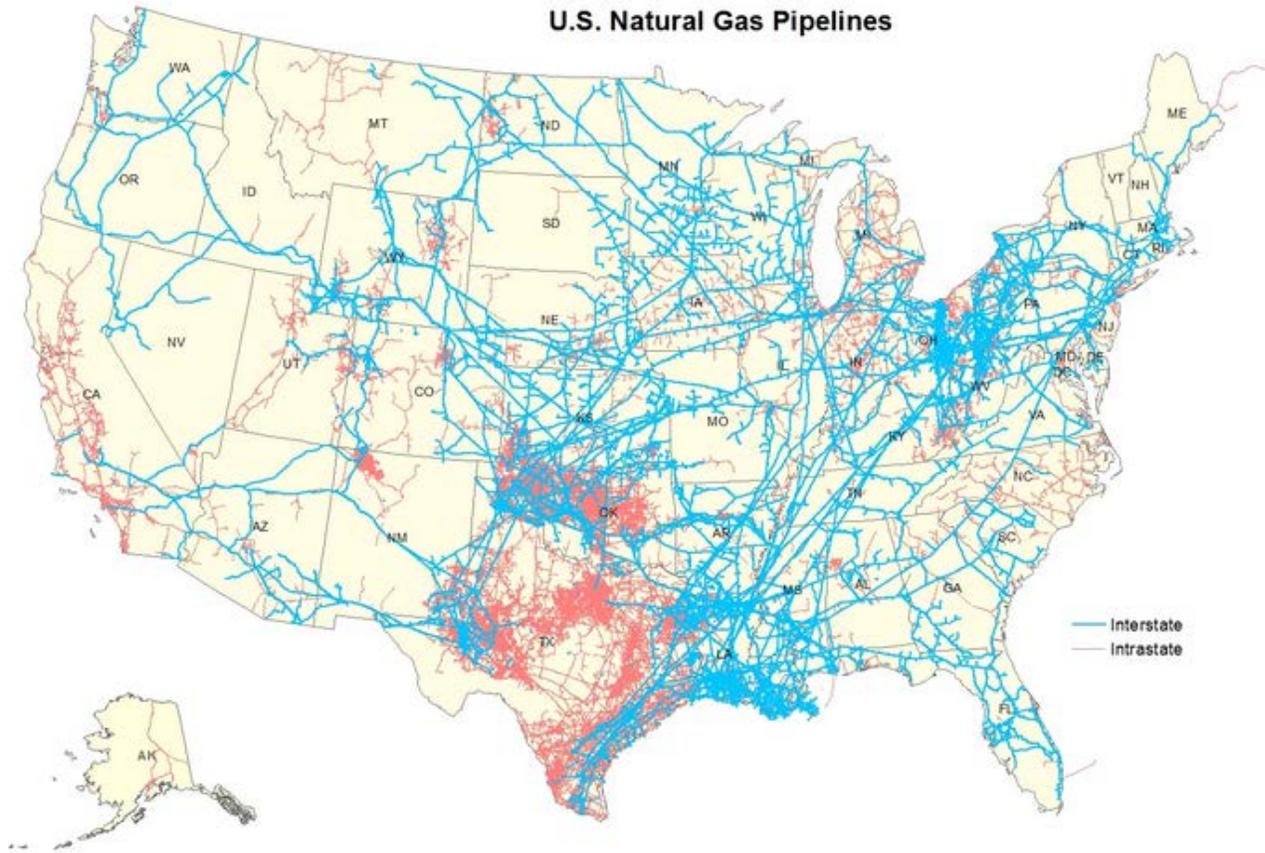
Summary Report #2 (Tasks 4-5)
2016 Alabama Statewide Freight Plan

Figure 8: Liquids Pipelines

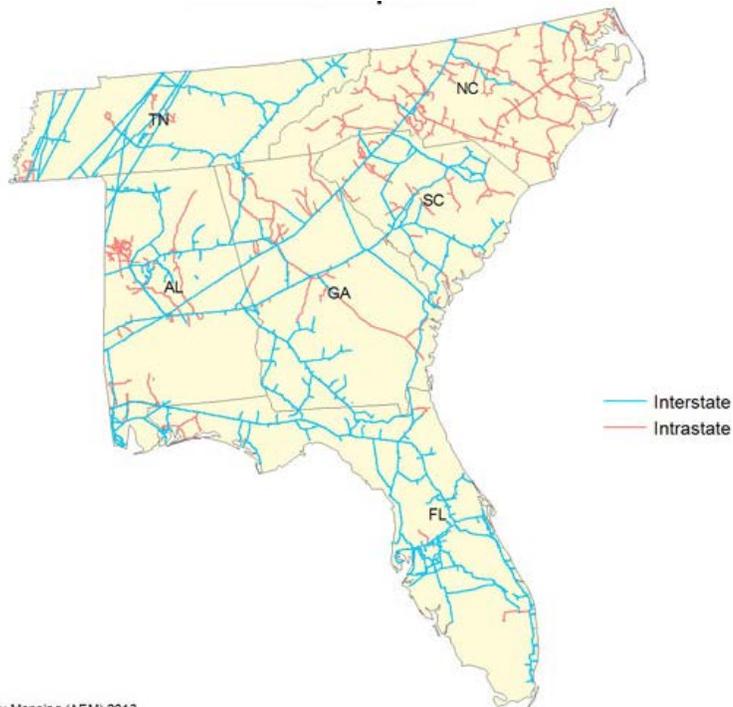


Summary Report #2 (Tasks 4-5)
2016 Alabama Statewide Freight Plan

Figure 9: Natural Gas Pipelines



Source: American Energy Mapping (AEM) 2013



Source: American Energy Mapping (AEM) 2013

Summary Report #2 (Tasks 4-5) 2016 Alabama Statewide Freight Plan

4.4 Intermodal Connectivity

A map of known intermodal connectors, including major roads, railways, ports, and airports, was developed by the ALDOT planning staff and is provided as Figure 10. As more information is collected from stakeholders and local representatives, the contents of this map will be amended accordingly. As the map shows, there is a high level of connectivity related to the multimodal network. More specifically:

- Most of the rail lines and port facilities are in close proximity to or directly served by major roadway facilities such as interstates and state roads.
- The major airports throughout the state are also in close proximity to major roadways.
- While there is connectivity between rail lines and airports, the need for intermodal transfers between these modes is limited by the highly time sensitive nature of air freight as compared to rail freight.

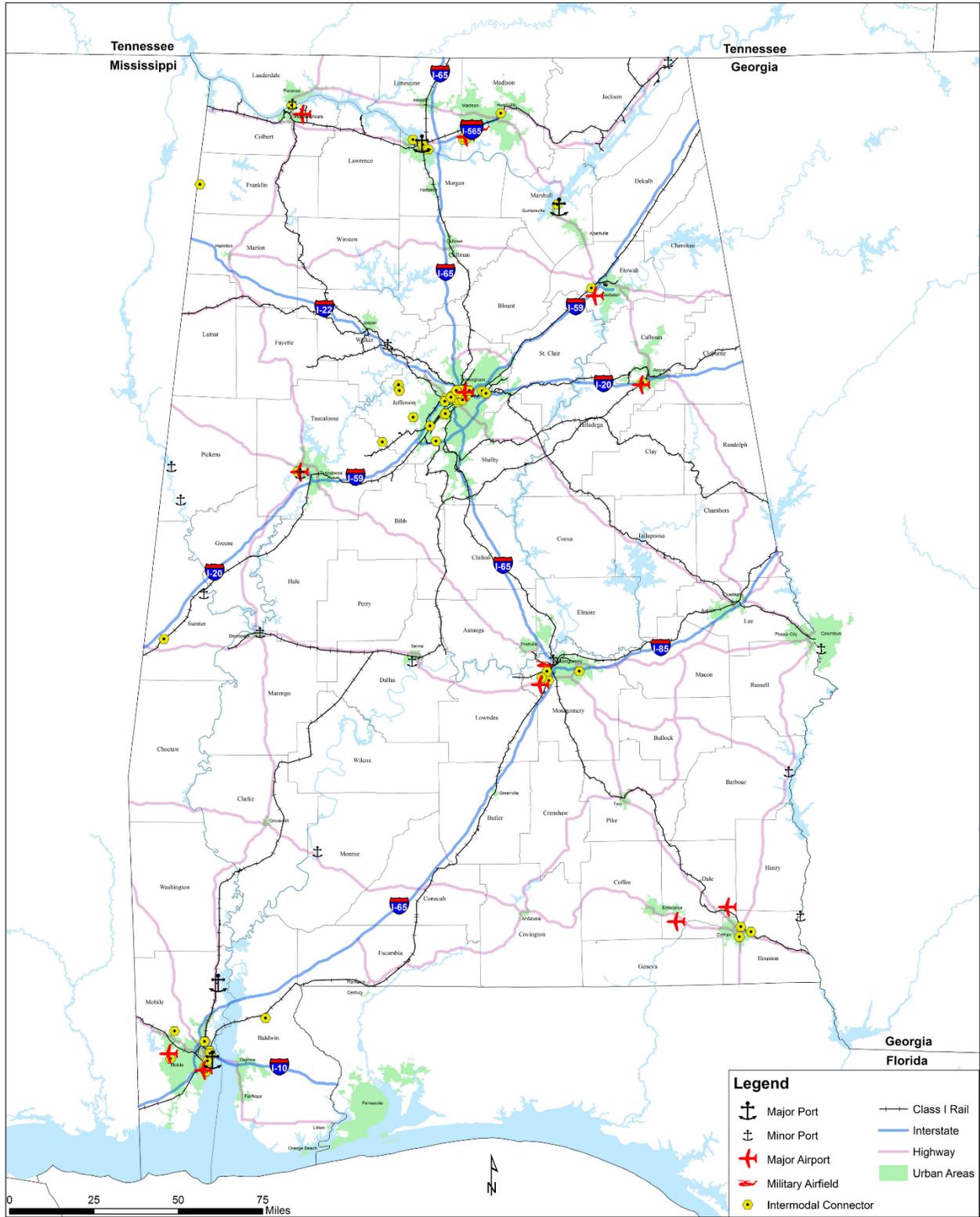
A brief overview of major intermodal facilities in Alabama is provided below:

- Port of Mobile (Alabama State Port Authority)—Owned and operated by the Port of Mobile, the port handles bulk and general cargo such as coal, liquid bulk, forest products, iron and steel products. The 4,000 acre complex includes McDuffie Island and Choctaw Point. A significant rail intermodal operation exists in the Mobile Bay area due to its location on the Gulf of Mexico. This has been enhanced by the Alabama State Port Authority's construction of the Choctaw Point and Garrows Bend facilities at the Port of Mobile. In January 2013, the Alabama State Port Authority's board of directors approved expenditures for the construction, inspection, and testing of a rail access bridge that will connect five Class I railroads (AGR/BNSF, CN/KCS, CSXT, NS) and the Authority's Terminal Railway (TASD) to an Intermodal Container Transfer Facility (ICTF), a rail intermodal facility and the second leg of the Authority's Choctaw Point intermodal program. The Port Authority will let \$11.5 million in contracts for the construction, inspection and testing of the rail access bridge into the intermodal rail facility. The ICTF will service import/export containerized cargoes moving through the Port, as well as domestic containerized cargoes from regional manufacturers. The project is expected to enhance the Port of Mobile's competitive position and make shipping containerized freight more efficient and economical.
- Port of Huntsville (International Intermodal Center)—Comprised of the Huntsville International Airport, the International Intermodal Center, and the Jetplex Industrial Park, the International Intermodal Center (IIC) located in the Port of Huntsville Global Logistics Park provides a single hub location specializing in receiving, transferring, storing, and distributing international and domestic cargo via air, rail, and highway. The Huntsville-Madison County Airport Authority (HMAQ) owns and operates 6.2 miles of industrial switching track off the NS spur into the IIC. The trackage serving the IIC has the capability to extend rail southward to any potential riverport facility, bringing total track to approximately 12 miles. The IIC also features a US Customs & Border Protection Port of Entry with Customs Officials, US Department of Agriculture Inspectors, and Custom Brokers on site.
- Norfolk Southern's Birmingham Regional Intermodal Facility (BRIMF)—Located in McCalla, the \$97.5 million facility was opened in 2012 on a 316-acre site adjacent to the Jefferson Metropolitan Logistics Park. The facility is a critical component of NS's multi-state Crescent Corridor initiative to establish an efficient, high-capacity intermodal freight rail route between the Gulf Coast and the Northeast. This facility allows transloading of both containers and trailers, with a capacity for 400 trucks per day.

Summary Report #2 (Tasks 4-5)
2016 Alabama Statewide Freight Plan

Figure 10: Draft 2016 Alabama Known Intermodal Connectors

Draft 2016 Alabama Known Intermodal Connectors



Summary Report #2 (Tasks 4-5) 2016 Alabama Statewide Freight Plan

- BNSF’s Finley Boulevard Yard—Finley Boulevard yard in Birmingham is an important part of the BNSF intermodal network handling freight for the Southeast region. Together with BNSF’s East Thomas Yard on 4th Street West, these facilities handle the shipment of automobiles and a mix of carload freight. BNSF’s business strategy includes alliances with shortline (Class III) railroads that can serve any of three roles: connections with industrial centers; switching customers and interchanging revenue traffic with Class I railroads; or operate a switching or terminal service transferring cars between railroads or group of facilities.¹
- CSXT’s Boyles Yard—This major rail yard for CSXT located in Birmingham offers TRANSFLO terminal services (for transferring liquid and dry products between transportation modes), providing logistics management of rail shipments nationwide.
- CSXT’s Central Alabama Intermodal Container Transfer Facility (CAICTF)—This intermodal container transfer facility is located approximately 15 miles southwest of Birmingham in Bessemer, with service to international customers between CAICTF and the Atlantic Ocean ports of Charleston and Savannah.
- Port Birmingham is an intermodal facility operated by Warrior & Gulf Navigation Co., with trackage for Birmingham Terminal Railway (BHRR, formerly Birmingham Southern Railway) at the Locust Fork of the Black Warrior River. This facility handles the transshipment of coal and iron ore. Additionally, Alabama Power (APOZ) operates an intermodal facility on the Locust Fork at its James H. Miller Steam Plant. Alabama Power utilizes this facility for the receipt of coal and delivery to its power plant.
- A number of other independent rail and truck transload facilities are located in Birmingham. Most of these intermodal facilities are clustered around 1st Avenue North, Finley Boulevard, I-20/59, Avenue W, and along the path of the planned Finley Boulevard extension.

5.0 Baseline Conditions and Base Year Commodity Flow Results

The following subsections describe the amounts and types of commodities transported throughout the state by truck, rail, waterway, air and pipeline. The analysis of base year conditions and commodity flows was undertaken at various levels for the different modes in the FAF3 database. For trucks, which have direct shipper to receiver access, the detailed model discussed previously will be used and presented. For the other modes, limited disaggregation and summary tables will be presented to identify which commodities are using the specific mode and their impact on the state. It should be noted that some of this information was presented in Summary Report #1.

5.1 Truck Commodity Flow

The truck commodities on the roadway system as defined by FAF3 for the base year 2012 were analyzed using both a summary statewide and with the travel model presented previously. Figure 11 shows the total annual kilotons of each commodity for the statewide commodities that originate in Alabama. Figure 12 shows the total annual kilotons of each commodity that terminate in Alabama. The most shipped commodity by truck both inbound and outbound is logs to support a number of industries, with nearly 80,000 kilotons traveling both in and out of Alabama. Gravel, natural sands and non-metal mineral products are also heavily shipped commodities via truck throughout the state.

¹ “Shortline Connection a Long-Term BNSF Strategy,” *Railway: The Employee Magazine of Team BNSF*, Winter 2013

Summary Report #2 (Tasks 4-5)
2016 Alabama Statewide Freight Plan

Figure 11: Commodities Originating in Alabama by Truck

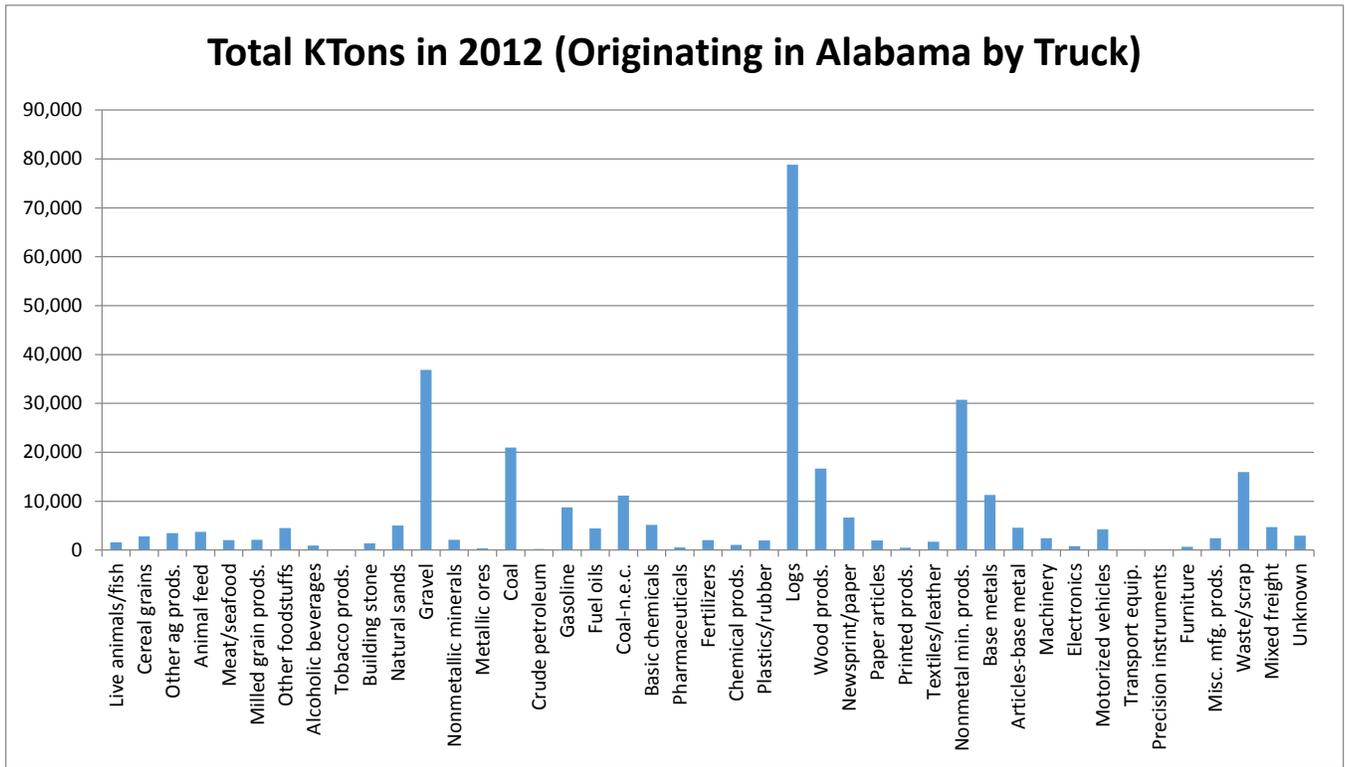
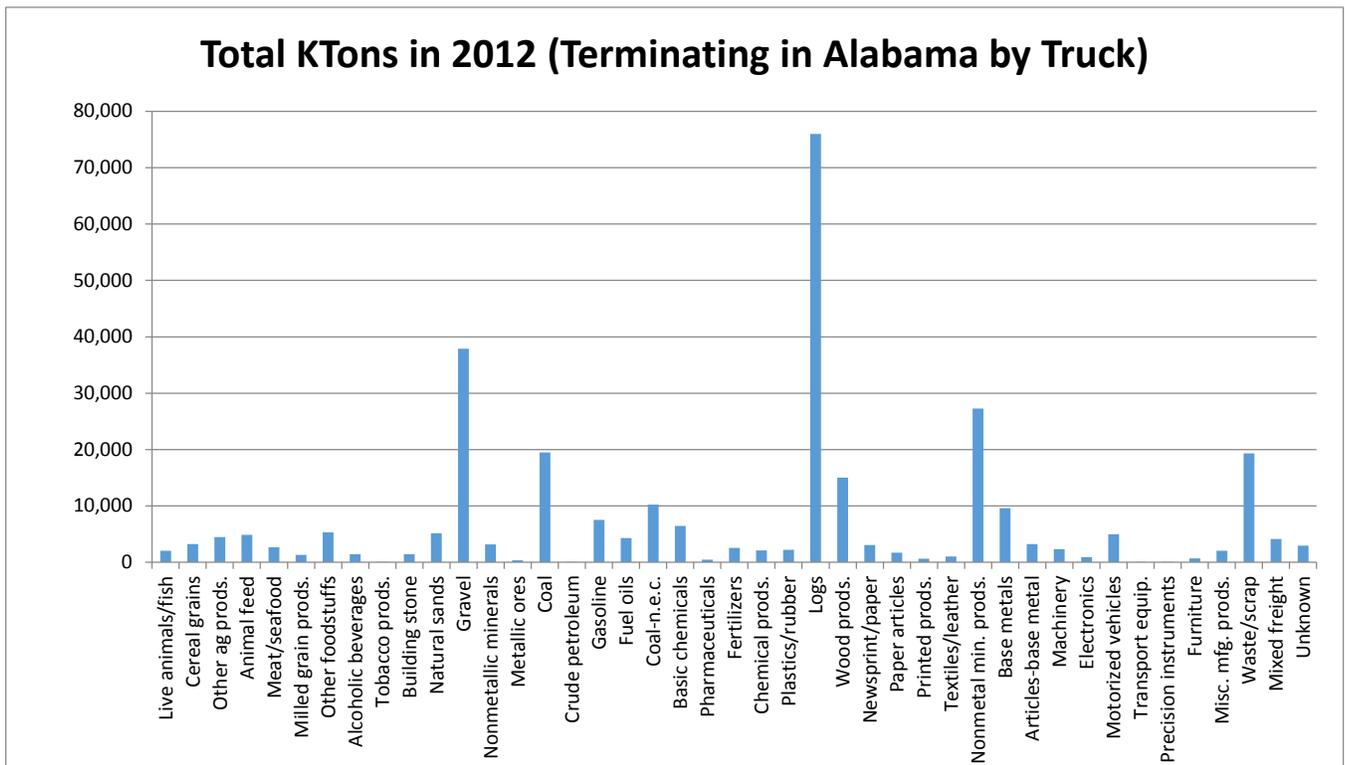


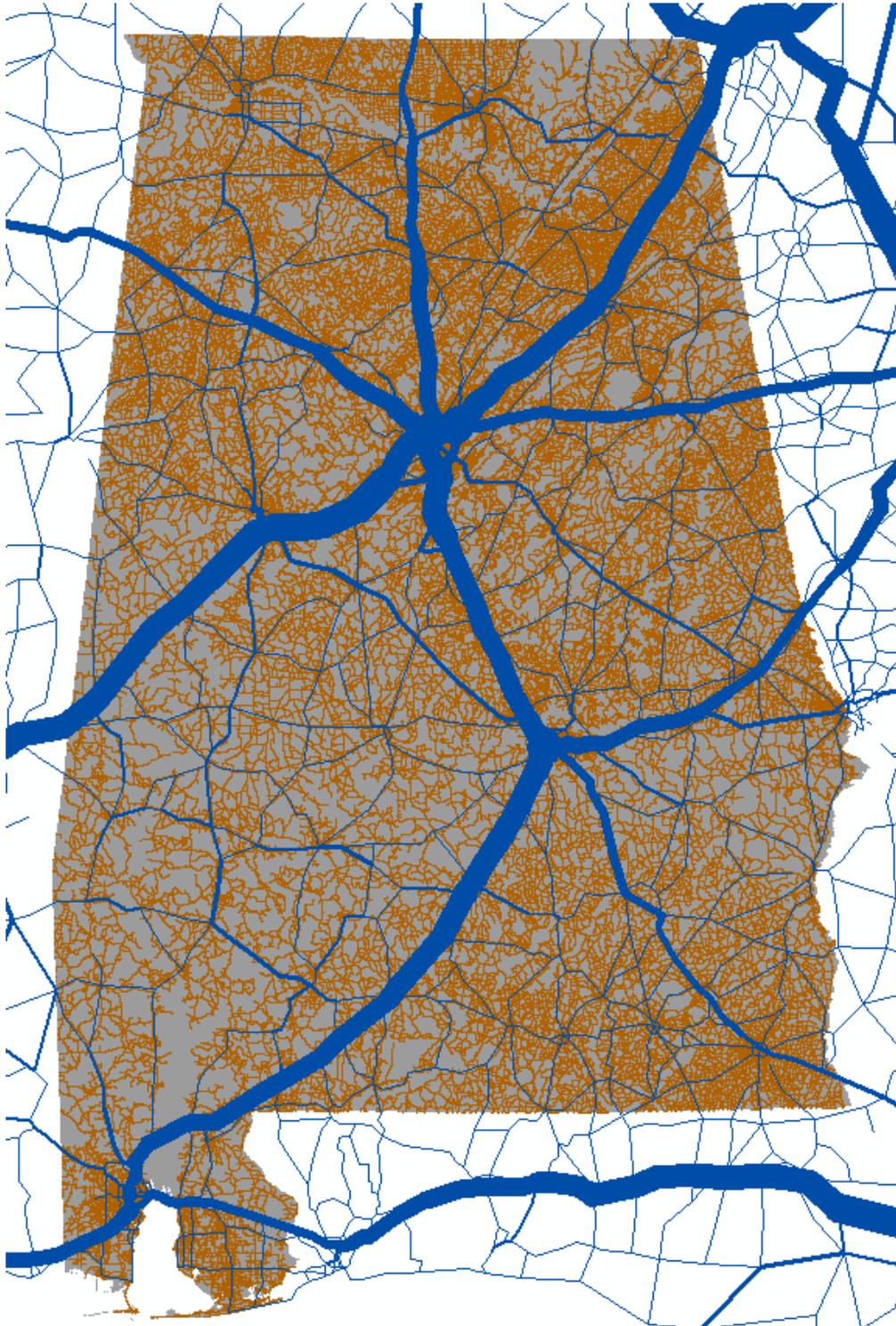
Figure 12: Commodities Terminating in Alabama by Truck



Summary Report #2 (Tasks 4-5) 2016 Alabama Statewide Freight Plan

Truck flow from the statewide model was developed as indicated previously, with the total truck flow for the state shown in Figure 13. The width of the roadway segment is proportional to the freight tonnage on the roadway. Additionally, for the four largest urbanized areas in Alabama, a commodity flow was developed to identify the commodities with the greatest tonnage on the roadways in the community. These results are shown in Table 2.

Figure 13: Commodity Flow through Alabama by Truck



**Summary Report #2 (Tasks 4-5)
2016 Alabama Statewide Freight Plan**

Table 2: Top 10 Commodities by Region by Truck

Rank	Birmingham	Huntsville	Mobile	Montgomery
1	Coal	Non-metallic Minerals	Coal	Logs
2	Non-metallic Minerals	Wood products	Coal Products	Non-metallic Minerals
3	Waste and Scrap	Waste and scrap	Non-metallic Minerals	Wood Products
4	Gravel and crushed stone	Base metals	Logs	Gravel and Crushed Stone
5	Base metals	Pulp	Waste and scrap	Waste and Scrap
6	Gasoline	Logs	Wood Products	Base Metals
7	Wood products	Motorized and other vehicle (parts)	Natural Sand	Pulp
8	Articles of base metals	Gravel	Basic Chemicals	Motorized Vehicles
9	Mixed Freight	Mixed Freight	Pulp	Coal and Petroleum Products
10	Basic Chemicals	Unknown commodity	Base Metals	Gasoline

Source: FAF Data 3.5

5.2 Rail Commodity Flow

The commodities on the state’s rail system have been analyzed using unique areas of the state. The first two are direct FAF3 zones, representing counties around Birmingham and Mobile. The remaining four are based on employment in the various counties that comprise the different portions of the remainder of the state, divided east-west by I-65 and north-south by I-20. For more information on overall rail commodity flow throughout the state, please refer to Summary Report #1.

5.2.1 Birmingham Area

For the Birmingham area, the annual kilotons of each commodity moved by rail that originate in the area are shown in Figure 14. Figure 15 shows the annual kilotons of each commodity that terminate in the Birmingham area. The predominant commodity shipped through the Birmingham area via rail is coal. Of particular note, the amount of coal originating in the area is roughly 6,000 kilotons compared to approximately 20,000 kilotons terminating in the area.

Summary Report #2 (Tasks 4-5)
2016 Alabama Statewide Freight Plan

Figure 14: Commodities Originating in Birmingham by Rail

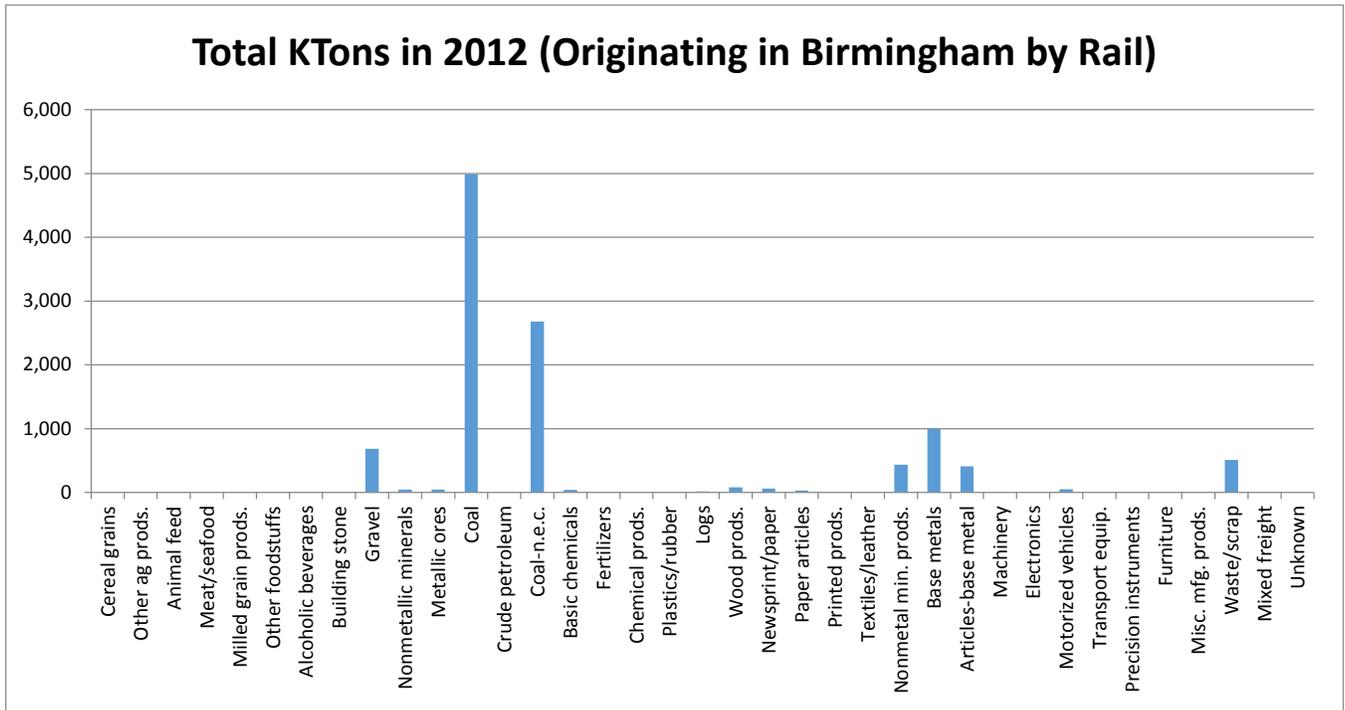
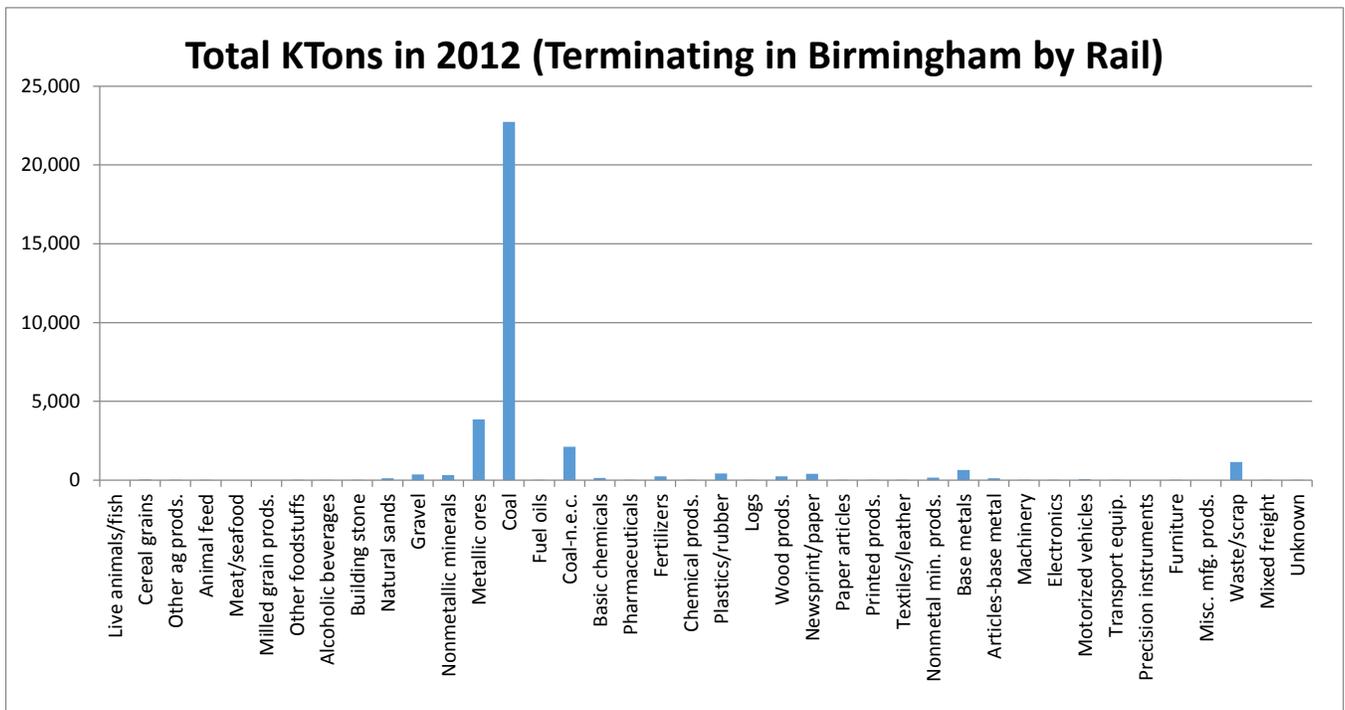


Figure 15: Commodities Terminating in Birmingham by Rail



Summary Report #2 (Tasks 4-5) 2016 Alabama Statewide Freight Plan

5.2.2 Mobile Area

The annual kilotons of each commodity moved by rail that originate and terminate in the Mobile area are shown in Figures 16 and 17. The most common commodity shipped by rail in the area is coal, with approximately 6,000 kilotons originating and 5,200 kilotons terminating in the area. Other commodities originating in the area include basic chemicals and base metals.

Figure 16: Top Commodity Flows Originating in the Mobile Area by Rail

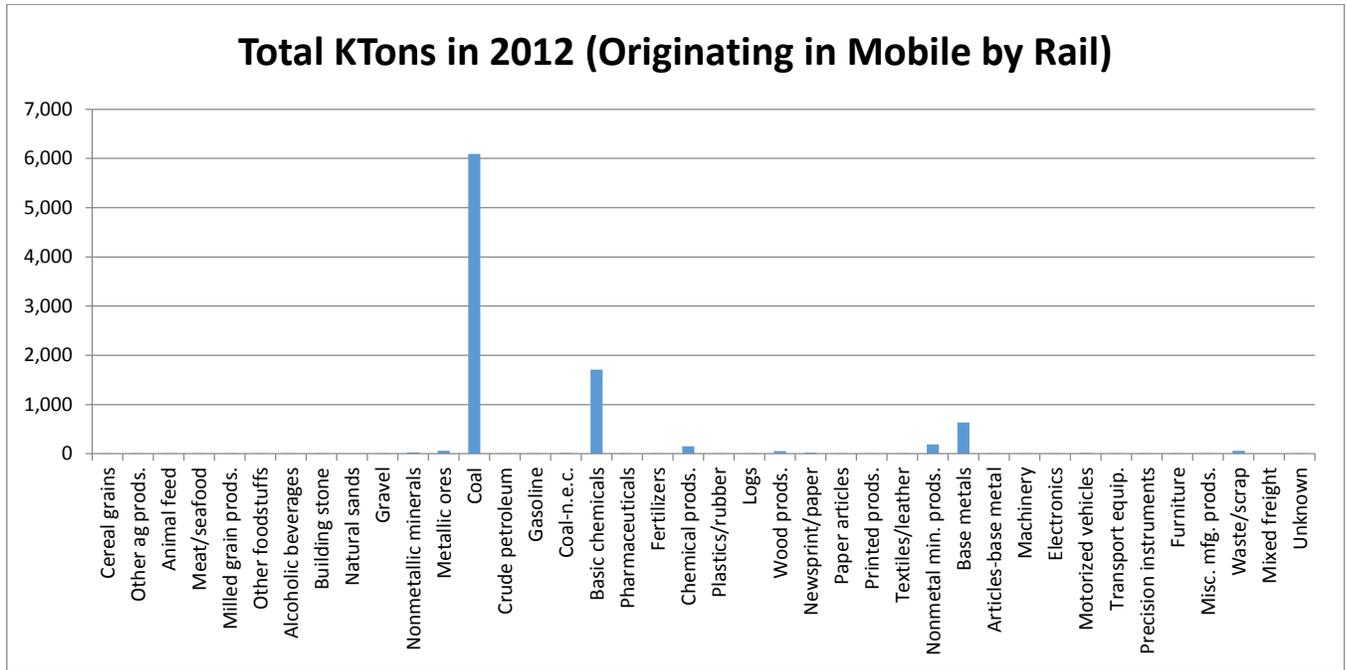
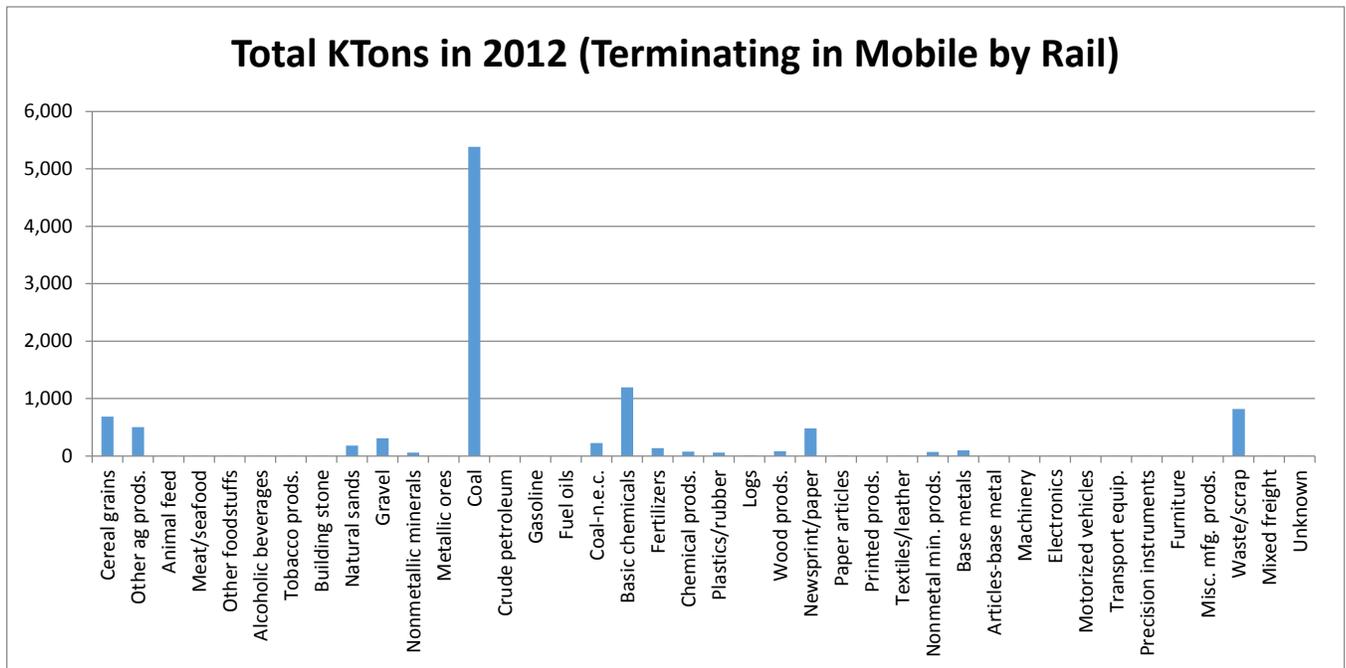


Figure 17: Top Commodity Flows Terminating in the Mobile Area by Rail



Summary Report #2 (Tasks 4-5) 2016 Alabama Statewide Freight Plan

5.2.3 Northeast Alabama Area

The annual kilotons of each commodity moved by rail that originate and terminate in the Northeast Alabama area are shown in Figures 18 and 19. The most common commodities shipped by rail in the area are coal and basic chemicals. The most common commodity coming into the area is coal, with approximately 900 kilotons terminating in the area per year. Basic chemicals make up the largest commodity shipped from the area by rail at approximately 1,600 kilotons shipped in 2012.

Figure 18: Top Commodity Flows Originating in Northeast Alabama by Rail

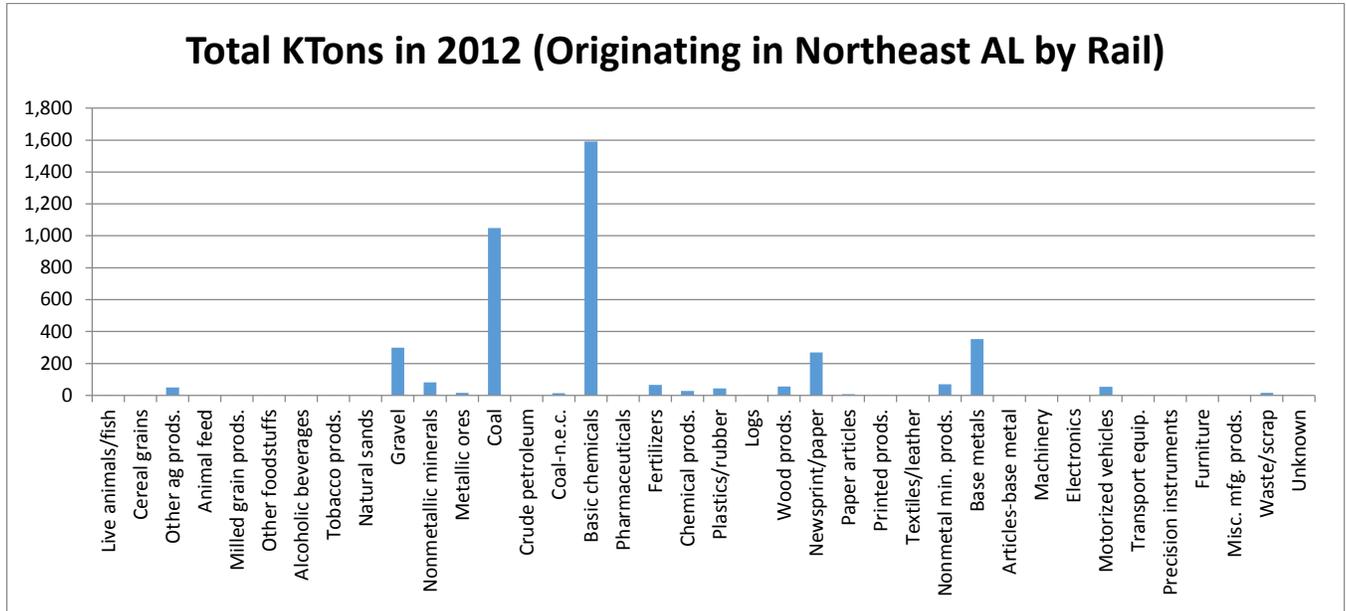
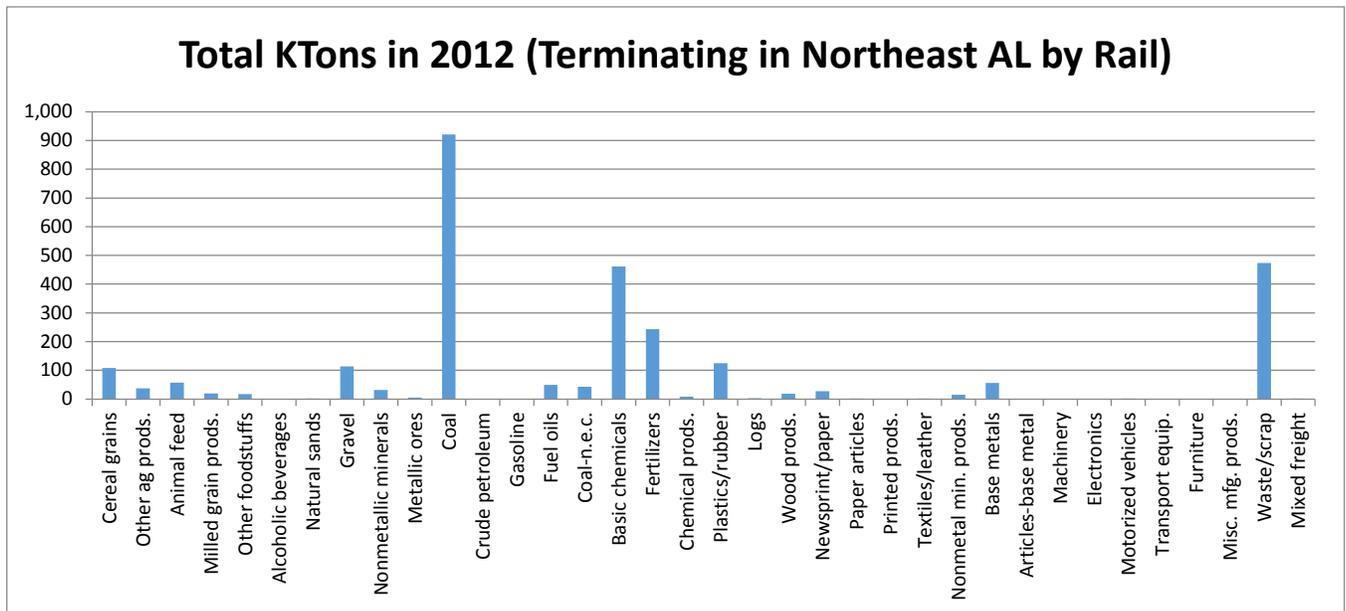


Figure 19: Top Commodity Flows Terminating in Northeast Alabama by Rail



Summary Report #2 (Tasks 4-5) 2016 Alabama Statewide Freight Plan

5.2.4 Southeast Alabama Area

The most common commodity shipped by rail in the area is coal, with approximately 2,000 kilotons originating in the area and over 1,800 kilotons terminating in the area. Another significant commodity shipped by rail was basic chemicals, with approximately 2,000 kilotons originating and 600 kilotons shipped into the area in 2012. The annual kilotons of each commodity moved by rail that originate and terminate in the Southeast Alabama area are shown in Figures 20 and 21.

Figure 20: Top Commodity Flows Originating in Southeast Alabama by Rail

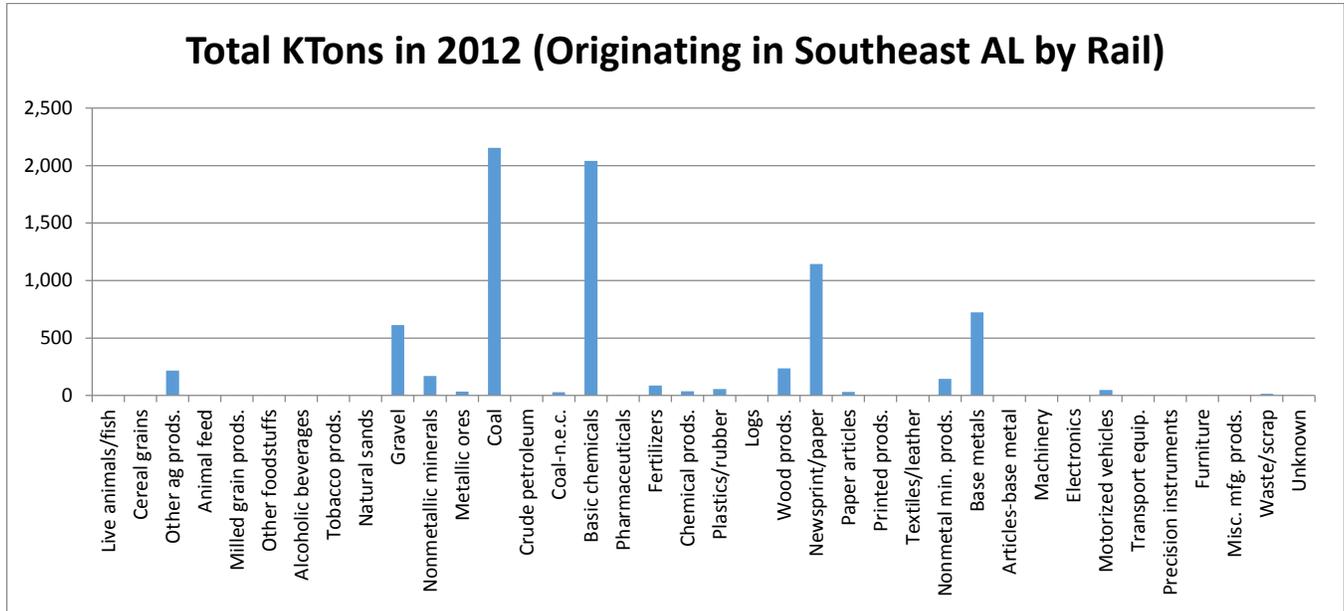
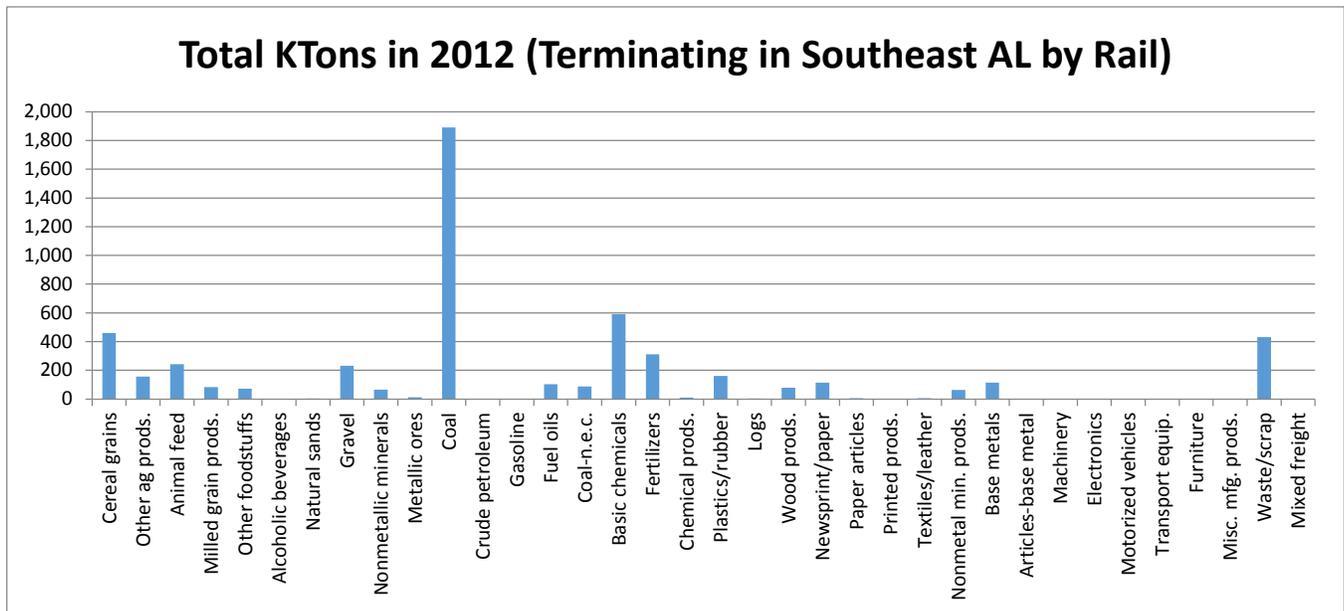


Figure 21: Top Commodity Flows Terminating in Southeast Alabama by Rail



Summary Report #2 (Tasks 4-5) 2016 Alabama Statewide Freight Plan

5.2.5 Southwest Alabama Area

The annual kilotons of each commodity moved by rail that originate and terminate in the Southwest Alabama area are shown in Figures 22 and 23. The most common commodity shipped by rail in the area is coal, with approximately 1,600 kilotons originating in the area and nearly 1,400 kilotons terminating in the area. Another significant commodity shipped by rail originating from the area was paper products, with nearly 1,200 kilotons in 2012.

Figure 22: Top Commodity Flows Originating in Southwest Alabama by Rail

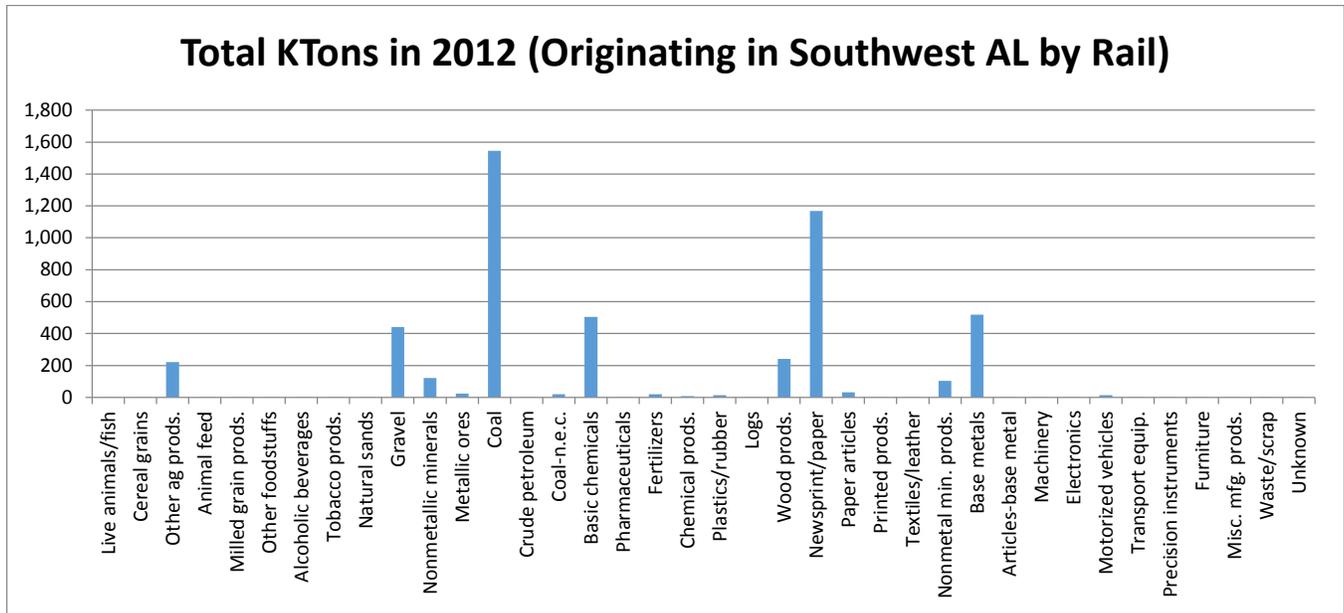
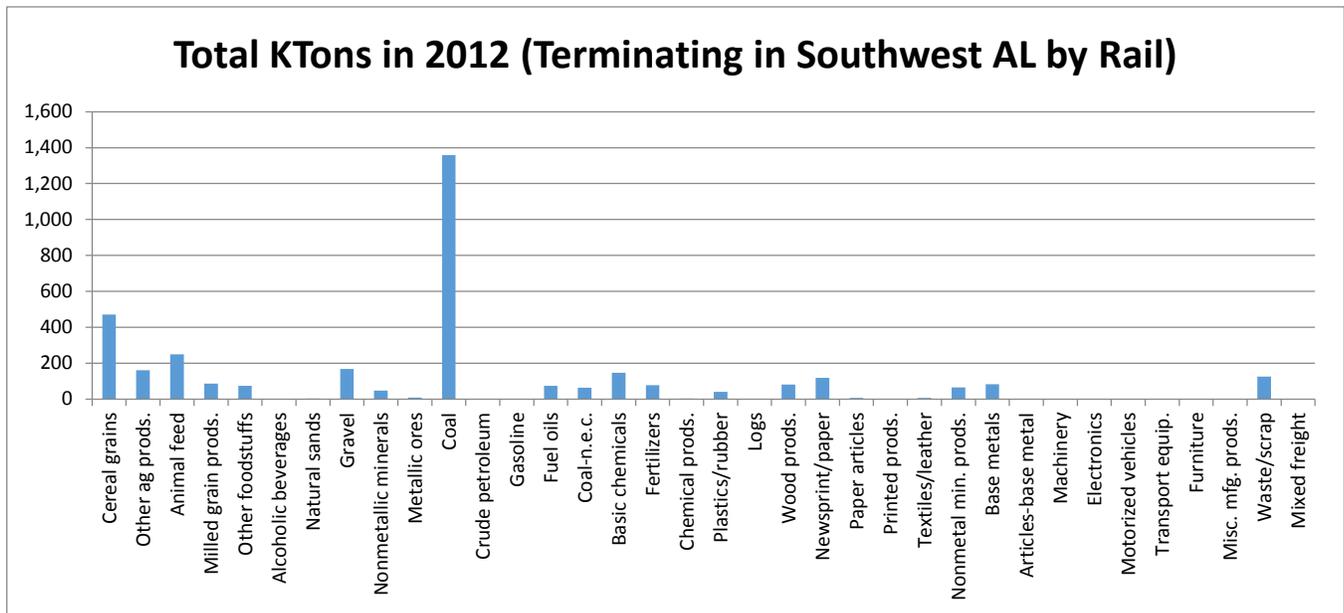


Figure 23: Top Commodity Flows Terminating in Southwest Alabama by Rail



Summary Report #2 (Tasks 4-5) 2016 Alabama Statewide Freight Plan

5.2.6 Northwest Alabama Area

The most common commodity shipped by rail in the area is coal, with approximately 3,500 kilotons originating and nearly 3,000 kilotons terminating in the area. Basic chemicals and base metals were also significant commodities shipped by rail originating in 2012 from the area. The annual kilotons of each commodity moved by rail that originate and terminate in the Northwest Alabama area are shown in Figures 24 and 25.

Figure 24: Top Commodity Flows Originating in Northwest Alabama by Rail

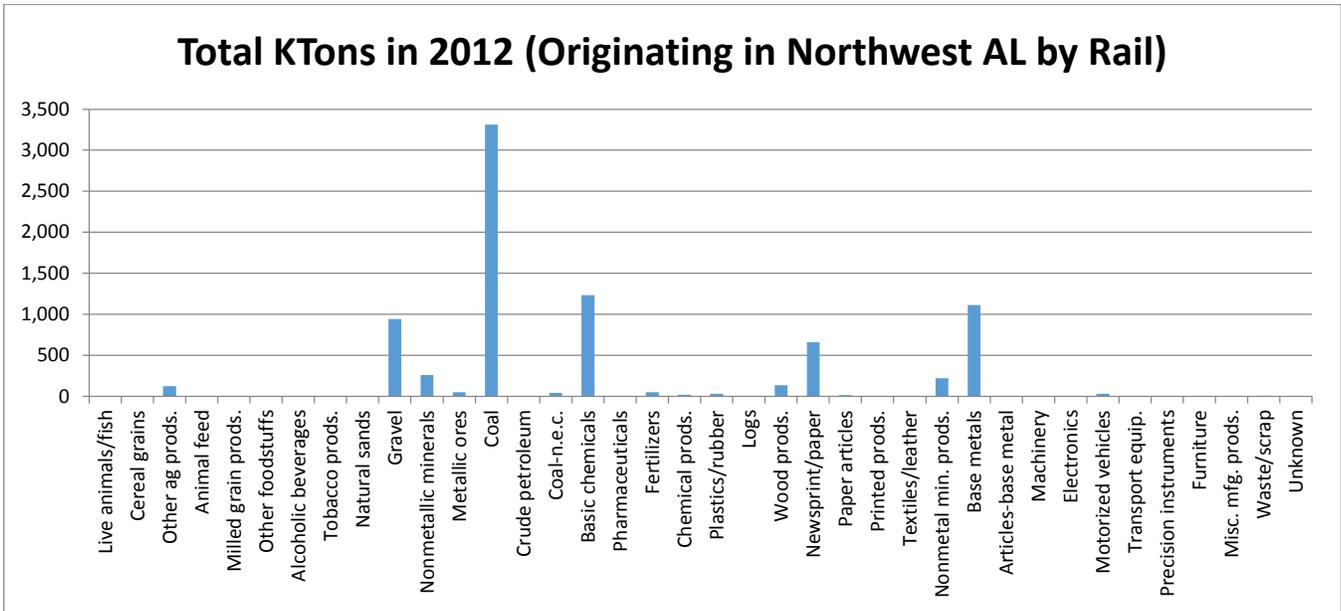
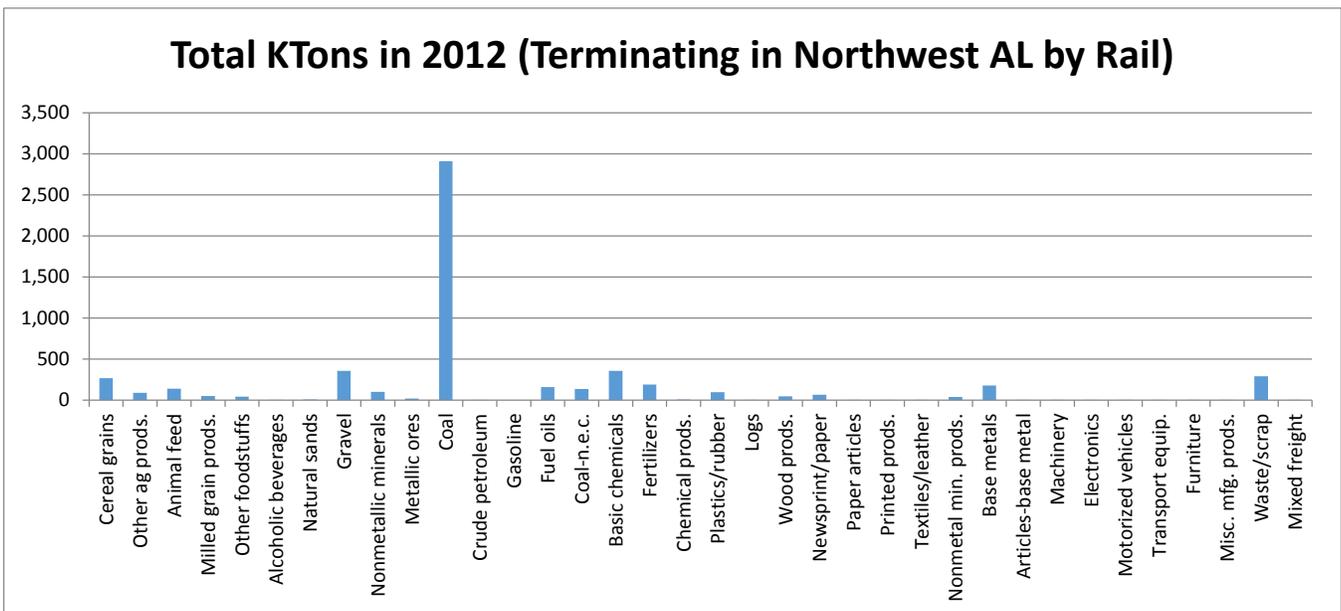


Figure 25: Top Commodity Flows Terminating in Northwest Alabama by Rail



**Summary Report #2 (Tasks 4-5)
2016 Alabama Statewide Freight Plan**

5.3 Waterways Other than the Port of Mobile

The commodities moving into and out of Alabama using the waterway data are analyzed on a statewide basis. This is due to the fact that the waterways are isolated and the commodities shipped to and from these locations are not necessarily directly related to the employment near the ports. The Port of Mobile is not included in this analysis.

For the ports internal to Alabama excluding the Port of Mobile, the total annual kilotons that are shipped that originate in Alabama are shown in Figure 26. The total annual kilotons that terminate at the ports in Alabama other than Mobile are shown in Figure 27. The most common commodities shipped from these ports were base metals and chemical products, whereas the most common imports were cereal grains, gasoline and basic chemicals.

Figure 26: Commodity Flows by Water Originating in Alabama Ports Other than Mobile

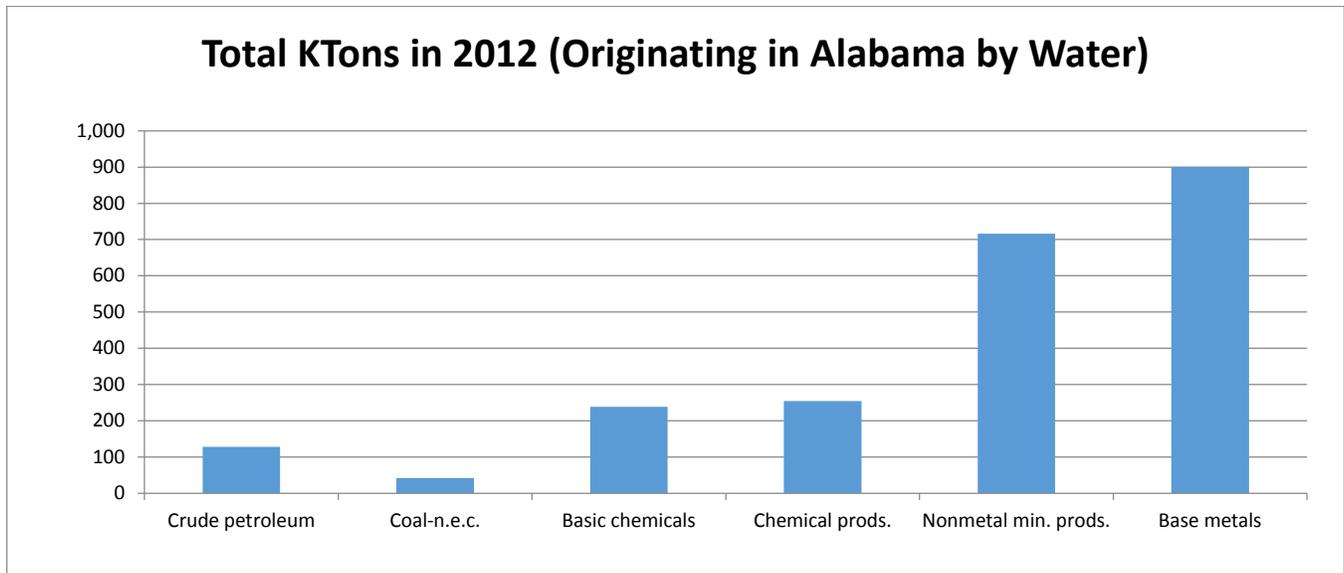
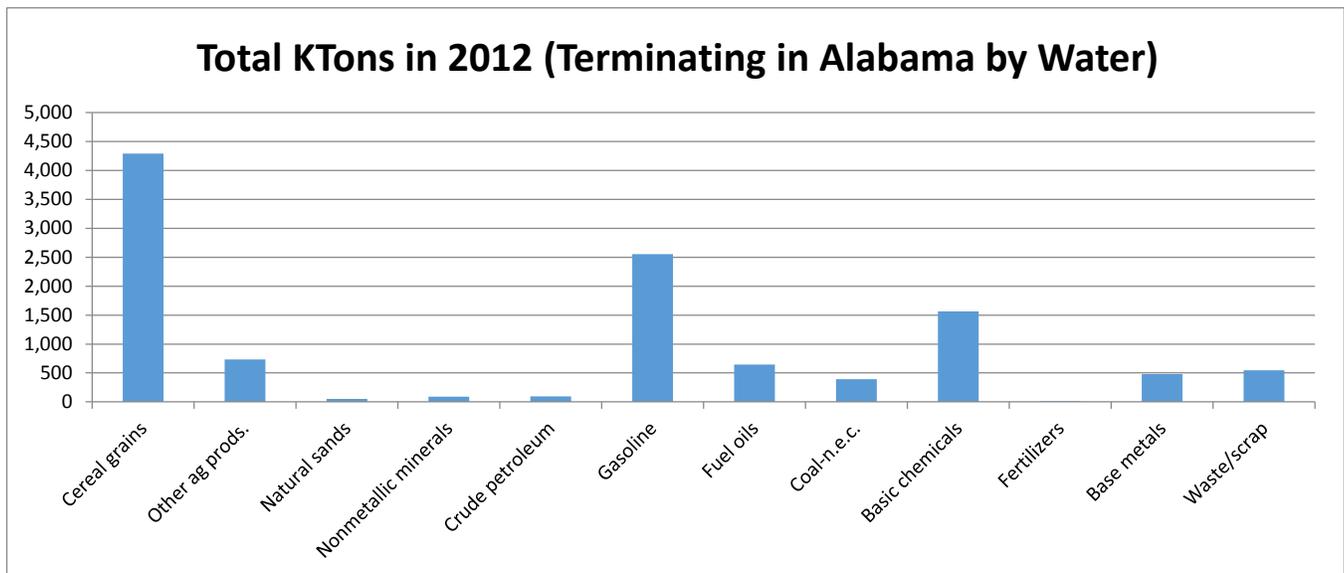


Figure 27: Commodity Flows by Water Terminating in Alabama Ports Other than Mobile



Summary Report #2 (Tasks 4-5) 2016 Alabama Statewide Freight Plan

5.4 Air Commodities

Annual kilotons of selected commodities in air freight moving into and out of Alabama are shown in Figures 28 and 29. Most freight by air is transported as cargo on commercial passenger flights and via couriers such as UPS and FedEx. When compared to other modes, the weight of commodities is much lower than other modes and is typically much more expensive.

Figure 28: Commodity Flows by Air Originating in Alabama

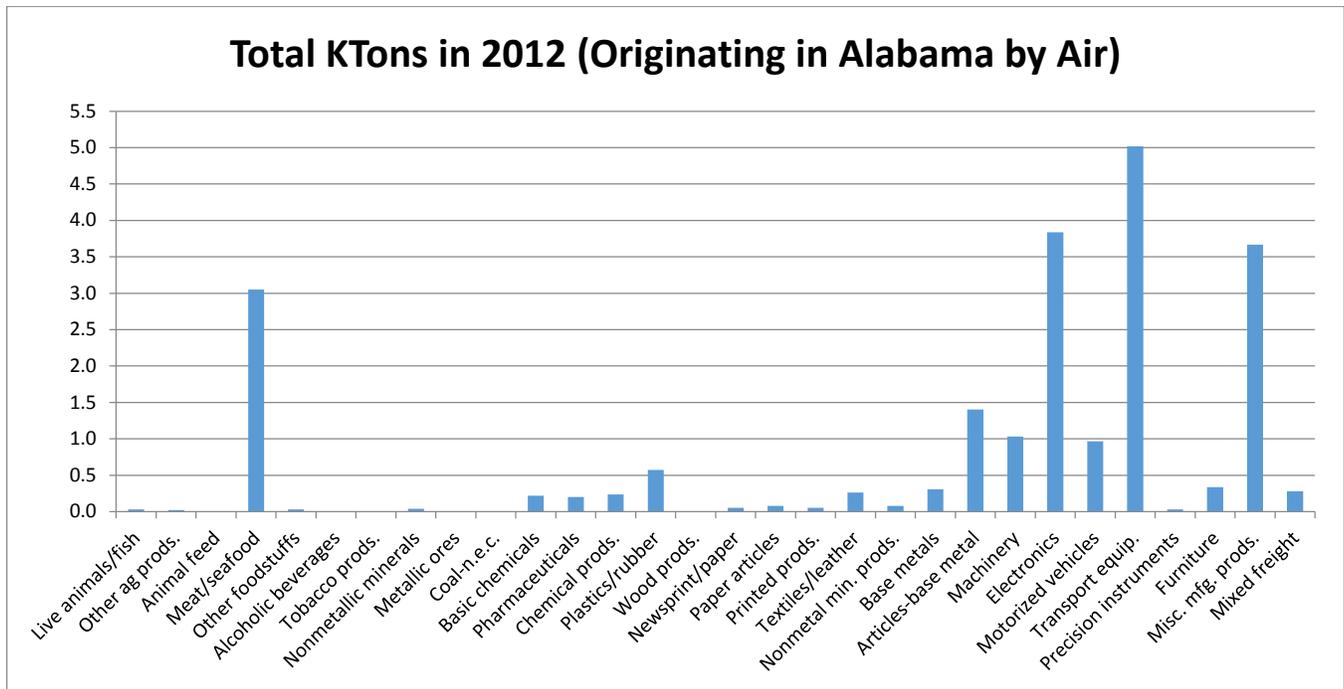
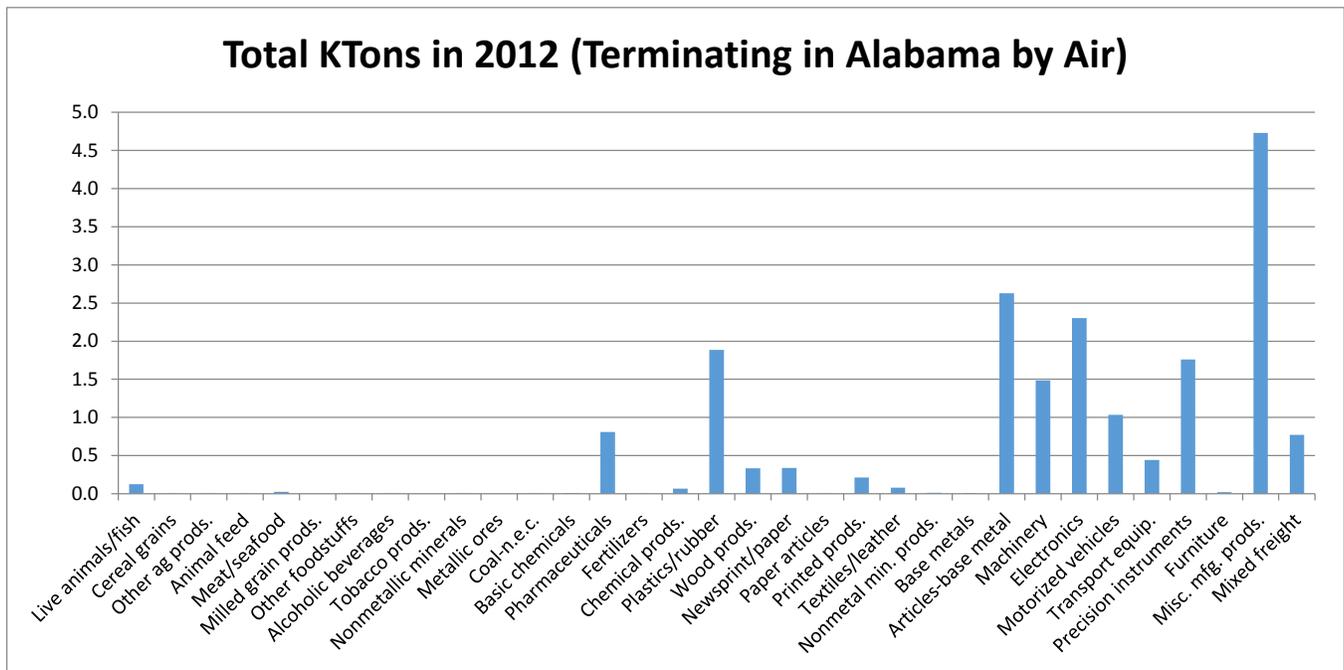


Figure 29: Commodity Flows by Air Terminating in Alabama



Summary Report #2 (Tasks 4-5) 2016 Alabama Statewide Freight Plan

5.5 Pipeline Commodities

Pipeline commodity flow is controlled wholly by the private sector. Annual kilotons of selected commodities pipeline originating and terminating in Alabama by pipeline are shown in Figures 30 and 31. Commodities by pipeline originating in Alabama are primarily coal and fuel related commodities and other chemical products. This is very similar to pipeline commodities terminating in the state, with the exception of gasoline.

Figure 30: Commodity Flows by Pipeline Originating in Alabama

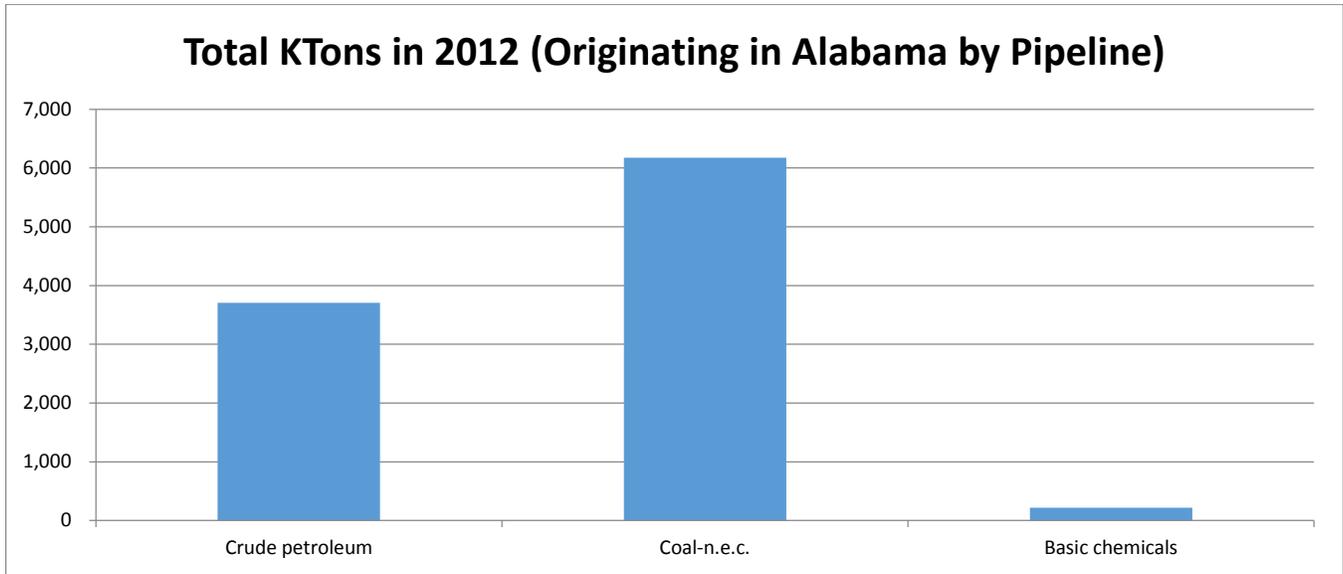
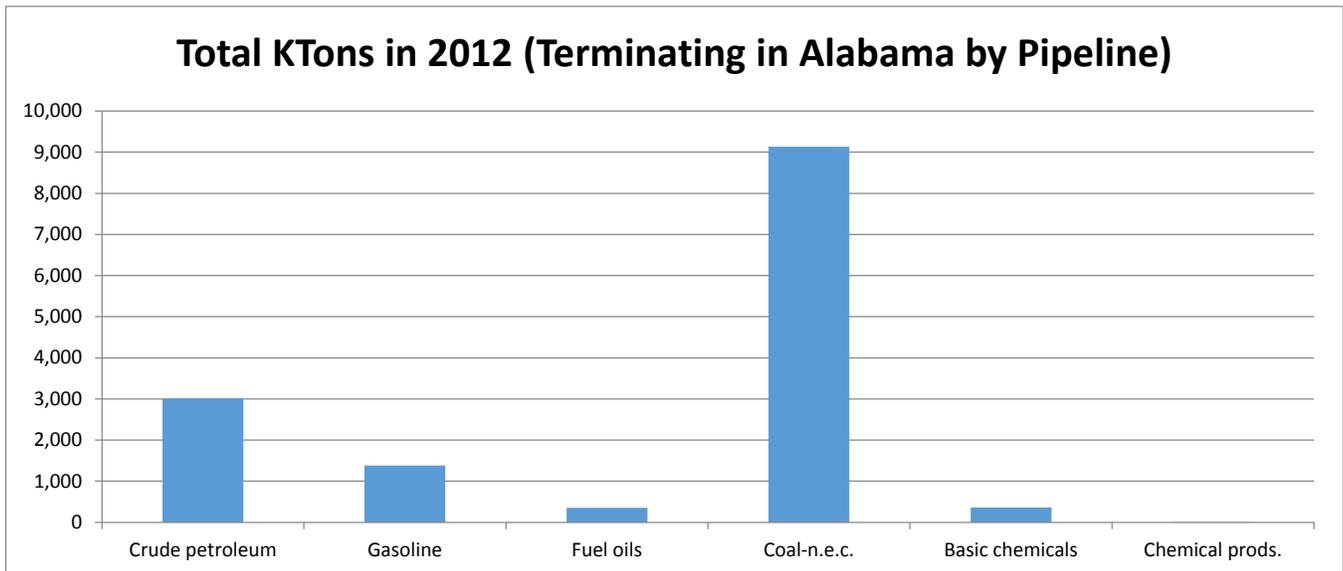


Figure 31: Commodity Flows by Pipeline Terminating in Alabama



Summary Report #2 (Tasks 4-5) 2016 Alabama Statewide Freight Plan

6.0 Freight Network Evaluation Framework

Based on the federal guidance and key freight considerations noted previously, an important component of the Freight Plan will be the development of performance measures to evaluate freight mobility throughout the state. Being a statewide effort, the evaluation framework must be completed at two levels:

- Statewide Level – It is important to establish state metrics based on current conditions so benchmarks can be developed to monitor the improvement of statewide freight mobility.
- Corridor Level – The analysis of certain conditions such as congestion, delay, and connectivity to other major freight generators and intermodal facilities can assist policymakers to prioritize needed freight improvements throughout the state.

Another early task in plan development was a peer review of statewide freight plans from Florida, Georgia, Mississippi and Tennessee. With regard to performance measures, the review yielded the following findings:

- All demonstrated a linkage of performance measures to federal and statewide policies as well as their goals and objectives.
- Being a statewide effort, performance measures should be kept at a very high level.
- The applicability and/or effectiveness of performance measures is inherently linked to the amount of data available to assess them.
- Input on the performance measures from their respective freight advisory committees.

Based on these trends, the initial performance measures presented herein were developed in a manner consistent with those of our bordering states.

6.1 Goals and Performance Measure Development Process

The overall mission statement and goals for the Freight Plan were established based on relevant federal and state policies.

Mission Statement: To promote the efficient and safe movement of goods in a manner that increases economic competitiveness and promotes environmental responsibility throughout the State of Alabama.

Goals:

- Goal 1: Improve reliability and reduce congestion on the statewide Primary Freight Network
- Goal 2: Ensure a state of good repair along priority freight corridors through the state
- Goal 3: Improve economic benefits by supporting public and private sector investment in the statewide freight network
- Goal 4: Promote the safety and security of the freight infrastructure
- Goal 5: Promote the use of ITS technologies to monitor and enhance the overall performance of the freight network
- Goal 6: Promote and enhance both the human and natural environment while enhancing the performance of the priority freight network

In order to ensure consistency with the overall mission statement, the performance measures developed for the plan must be consistent with its overall goals. This also serves to ensure that monitoring and project evaluation processes throughout the state are consistent with federal and state guidelines.

Summary Report #2 (Tasks 4-5)

2016 Alabama Statewide Freight Plan

The level of detail within performance measures is determined by the data available to evaluate them. As a result, some measures will be more data-driven, or quantitative, than those that rely on more qualitative assessments. The data sources available for more quantitative assessments are:

- Statewide Freight Model – The statewide freight model can be utilized as a source for a number of statewide measures regarding congestion and mobility on the network. Furthermore, factors such as delay also impact other considerations, such as economic competitiveness and environmental sustainability (due to emissions).
- ALDOT Pavement Management Program – ALDOT maintains a database of pavement for all state roadways, which can be used to measure conditions statewide and assess maintenance needs along freight corridors.
- ALDOT Bridge Program – This program can be used to assess the number of weight-restricted bridges and/or those with a low sufficiency rating along the freight network.
- Critical Analysis Reporting Environment (CARE) – CARE is a data analysis tool that can be used to assess safety conditions on either a statewide or corridor level.
- US Census Data – This data can support the evaluation of statewide measures such as employment in freight related industries or concentrations of low income and minority populations for Environmental Justice corridor related analysis.
- Comprehensive Project Management System (CPMS) – The CPMS is a tool used by ALDOT to organize the implementation of transportation improvements. It can be utilized to assess the actual investment in freight related projects throughout the state.
- Local Land Use and Environmental Data – Usually transmitted via GIS files, this information provides a means for identifying major freight generators and environmentally sensitive resources.

Thus far in the plan development process, little input has been received from the Freight Advisory Committee (FAC) regarding potential performance measures. However, the initial performance measures described herein will be presented to the FAC for comment.

More detail on the development of the mission statement and goals, the peer review results and findings, and coordination with the FAC can be found in Summary Report #1.

6.2 Initial Performance Measures

The initial performance measures for the Plan are provided in Table 3. Of particular note:

- A direct linkage is shown between the goals, performance measures, and available data sources. With this linkage, these measures are also consistent with federal and state policy.
- Given that these performance measures are used to monitor conditions at a statewide level, they reflect a high level assessment appropriate for statewide analysis.
- The number of measures are limited to avoid complications with the evaluation process and to make it easier to understand for users, policymakers, and the public.

As more data becomes available and analysis tools evolve, these performance measures will need to be periodically re-evaluated.

Summary Report #2 (Tasks 4-5) 2016 Alabama Statewide Freight Plan

Table 3: Initial Freight Plan Performance Measures

Draft Goals	Draft Performance Measures - Statewide (PFN)	Draft Performance Measures - Corridor	Data Source(s)
Goal 1: Improve reliability and reduce congestion on the statewide Primary Freight Network	Annual hours of truck delay along the Primary Freight Network (PFN)	Annual hours of truck delay	Statewide Freight Model
	VMT of truck traffic along PFN	VMT of truck traffic	Statewide Freight Model
	Total number of pass-thru trucks through Alabama along PFN	Overall truck volumes	Statewide Freight Model
		Percent truck volume of total volumes	Statewide Freight Model
Goal 2: Ensure a state of good repair along priority freight corridors through the state	Average pavement rating along PFN compared to statewide averages per functional class	Average pavement rating along corridor per statewide average per functional classification	ALDOT Pavement Management Program
	Percentage of MO funding spent along the PFN vs. statewide (Minor Arterials and up)	Not applicable	CPMS
	Number of weight-restricted bridges along the PFN	Not applicable	ALDOT Bridge Program
	Number of ALDOT low-rated bridges along the PFN	Not applicable	ALDOT Bridge Program
Goal 3: Improve economic benefits by supporting public and private sector investment in the statewide freight network	Annual hours of truck delay along PFN	Annual hours of truck delay	Statewide Freight Model
	Statewide annual funds invested by ALDOT for freight-related projects vs. overall projects - capacity and MO	Not applicable	CPMS
	Number of major generators within 15 miles of PFN	Number of active freight generators within 15 miles of the corridor	ALDOT Major Freight Generators
	Percent of Alabama workforce employed in freight-related industries	Not applicable	US Census American Community Survey
Goal 4: Promote the safety and security of the freight infrastructure	Statewide annual crashes, injuries, and fatalities involving heavy trucks	Not applicable	CARE
	Level of safety infrastructure along at-grade crossings along the PFN	Level of safety infrastructure along at-grade crossings	ALDOT Section 130
Goal 5: Promote the use of ITS technologies to monitor and enhance the overall performance of the freight network	Number of ITS implementation and/or operations-based projects identified in STIP	Presence of ITS infrastructure components (DMS, signal coordination, TMC)	CPMS (Statewide), Project sponsor (Corridor)
	Percentage of total freight improvement costs dedicated towards ITS implementation and/or operations-based improvements compared to statewide levels	Amount of investment of proposed project dedicated to ITS enhancements	CPMS (Statewide), Project sponsor (Corridor)
Goal 6: Promote and enhance both the human and natural environment while enhancing the performance of the priority freight network	Annual hours of truck delay along high priority freight network	Annual hours of truck delay	Statewide Freight Model
	Annual percentage of freight projects (identified in the Statewide Freight Plan) receiving environmental clearance without requiring the completion of an Environmental Impact Statement (EIS).	Qualitative assessment of NEPA issues along corridor (river crossings, swamps, historical features)	ALDOT (Statewide); GIS data (Corridor)
	Percent of all plans developed through ALDOT administered funds with freight components that address Title VI compliance (Includes Statewide Freight Plan, STP, UPWPs, TIPs, LRTPs, regional freight plans, and local CTPs)	Concentration of low income and minority populations along the corridor	ALDOT (Statewide); US Census, American Community Survey (Corridor)

Summary Report #2 (Tasks 4-5) 2016 Alabama Statewide Freight Plan

7.0 Major Findings and Next Steps

The following items represent some of the major findings of this report:

- It is important to recognize that the roadways in the statewide model are limited, and that the majority of roadways in the urban MPO models are absent from the statewide model. As such, the statewide model is not intended to accurately predict truck traffic on each roadway within a particular urban area, but to be a tool for determining the appropriate magnitude of truck traffic throughout the state.
- The statewide multimodal freight network is well connected in that most railways, ports, and airports are in proximity to major roadways. Most ports are also served by rail.
- Most freight travels throughout the state via truck and/or rail.
- The most shipped commodity by truck both inbound and outbound is logs to support a number of industries, with nearly 80,000 kilotons traveling by truck both in and out of Alabama. Gravel, natural sands, and non-metal mineral products are also heavily shipped commodities via truck throughout the state.
- Coal is the commodity most shipped by rail throughout the state. A notable amount of basic chemicals are also shipped by rail, with higher levels originating in the northeast and southeast portions of the state.
- A high level of freight traffic travels through the Birmingham area. The greatest volumes of truck freight flow along the area's interstates, which include I-65, I-20, I-59, I-459, and the soon to be completed I-22.
- The draft performance measures have been developed to address the major emphasis areas of federal freight policy and are consistent with the overall goals for freight mobility. They are also consistent with those freight plans from Alabama's neighboring states and will be finalized after review and comment from the FAC.

The establishment of the commodity flow modes and amounts throughout the state and development of the statewide model has set the baseline. Developing the main components of the overall planning document will occur through the following upcoming activities:

- Identification of Major Freight Generators – The project team will complete the identification of major freight generators throughout the state in order to validate the employment densities in the base year 2012 statewide freight model. ALDOT has already created a draft map of these locations, which will be compared to input received from the MPOs and other stakeholders. This will result in a more accurate origins and destinations analysis for freight travel.
- Identification of Chokepoints – The base year model will be used to develop an initial assessment of congested areas for freight statewide. These chokepoints will also include areas where roadways with high levels of truck traffic conflict with highly used freight railroads at at-grade crossings. This information will also be validated through input from MPOs and stakeholders.
- Development of 2040 Projected Conditions – The statewide model will use 2040 population and employment projections and projected freight volumes to forecast future congestion levels and connection needs throughout the state.
- Identification of Universe of Freight Improvements – Based on existing and projected conditions, a list of potential projects will be developed to alleviate freight deficiencies, to include capacity and

Summary Report #2 (Tasks 4-5)
2016 Alabama Statewide Freight Plan

operations improvements as well as ITS treatments. It is expected that many of the projects identified through these analysis activities will already be included on the ALDOT work program.

- Finalization of Initial Performance Measures – The draft evaluation criteria will be presented to the FAC and finalized based on their input.
- Development of Overall Investment Strategy – The universe of freight improvements will be evaluated against the final performance measures to prioritize potential improvements, including maintenance needs, in order to develop an overall improvement strategy for freight mobility.