2016 Alabama Statewide Freight Plan Summary

Prepared for

Alabama Department of Transportation
Bureau of Transportation Planning and Modal Programs

Prepared by
J. R. Wilburn and Associates, Inc.

March 2016

S-1—Introduction and Plan Framework

The *2016 Alabama Statewide Freight Plan* (Freight Plan) establishes the freight planning and performance monitoring activities to be undertaken throughout the state by the Alabama Department of Transportation (ALDOT). The Freight Plan aligns Alabama's freight policy with the most recent federal legislation and related guidance from the Office of Freight Management and Operations in the Federal Highway Administration (FHWA). Key plan elements include:

- Overview of relevant policy that influences freight planning at the statewide level
- Update of existing and projected commodity flows and freight network characteristics, which provide the baseline for identifying needs statewide
- Identification of a Statewide Primary Freight Network, based on criteria consistent with federal policy and input from stakeholders
- Summary of freight improvements of statewide significance, forming the overall Freight Investment Plan
- Initial framework for freight project prioritization and performance monitoring for ALDOT's use and refinement over the coming years

The contents of the Statewide Freight Plan were primarily driven by the guidance set forth in the Moving Ahead for Progress in the 21st Century Act (MAP-21), the federal transportation bill in place at the time the plan was initiated. Recently, a new federal transportation bill called the Fixing America's Surface Transportation (FAST) Act was passed into law in December 2015. While the Freight Plan was developed under the guidance of MAP-21, it is consistent with the requirements laid out in the FAST Act. The mission statement and associated goals guide ALDOT in developing a coordinated freight policy that meets the needs of the State while adhering to FHWA policy. Chapter 1 of the Freight Plan details the policy framework, mission and goals, and plan content outlined in MAP-21 and the FAST Act.

The Freight Plan builds on the data and findings presented in two interim deliverables (Interim Progress Report #1 and #2), which are included as appendices to the Freight Plan. An important element of the plan development process was the engagement of key stakeholders throughout the state through the Freight Advisory Committee (FAC) and regional meetings with the Metropolitan Planning Organizations (MPOs).

S-2—Existing and Projected Commodity Flow Results

Chapter 2 provides an overview of existing and projected commodity flows by mode (truck, rail, waterway, air, and pipeline) throughout Alabama for the years 2012 and 2040. Commodity flows were developed through the statewide commodity flow assignment process which relies on its primary data source, the Freight Analysis Framework Version 3.5 (FAF3) produced by 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) the remainder of the state.

Commodity flow characteristics that significantly influenced development of the Freight Plan include:

- Trucks will remain the most utilized mode for freight movement. The overall projected increase of truck freight flow, in conjunction with limited funding for additional capacity infrastructure,

heightens the need for a long-term improvement strategy along Alabama's roadways.

- The uncertainty of future coal demand has a profound impact on freight movement in Alabama. While the overall impact to roadways appears to be negligible, impacts to the Port of Mobile and rail freight flows could be more significant.
- Overall increases in rail and truck traffic confirm the need for continued improvements to at-grade rail crossings through the Section 130 Program.
- The share of overall freight traffic shipped by air is relatively small but increases for most major commodities shipped via air are projected. Therefore, better freight roadway connections and access to major airports may be needed in the near future.

S-3—Existing and Projected Network Characteristics

Chapter 3 of the Freight Plan provides an overall profile of Alabama's multimodal freight network, existing and projected freight flows by truck, and congested areas of concern throughout the state. The findings support the subsequent identification of key improvements to facilitate freight mobility statewide.

An inventory of known intermodal connectors, including major roads, railways, ports, and airports, was developed by the ALDOT planning staff. As Figure S-1 shows, there is a high level of connectivity related to the multimodal network. Specifically:

- Most of the rail lines and port facilities are in close proximity to or are 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.
- Connectivity between rail lines and airports exists, but intermodal transfers between these modes are limited by the highly time-sensitive nature of air freight as compared to rail freight

Figure S-2 shows major freight generators throughout the state, including intermodal facilities as well as large industrial and manufacturing uses. The identification of these generators was necessary to validate employment data and truck generation factors reflected in the statewide commodity flow assessment. As would be expected, most freight generators are concentrated around major highways and/or railroads.

An assessment of existing and projected commodity flow along roadways identified areas where future improvements could facilitate overall freight mobility. Corridors with high commodity flow levels include:

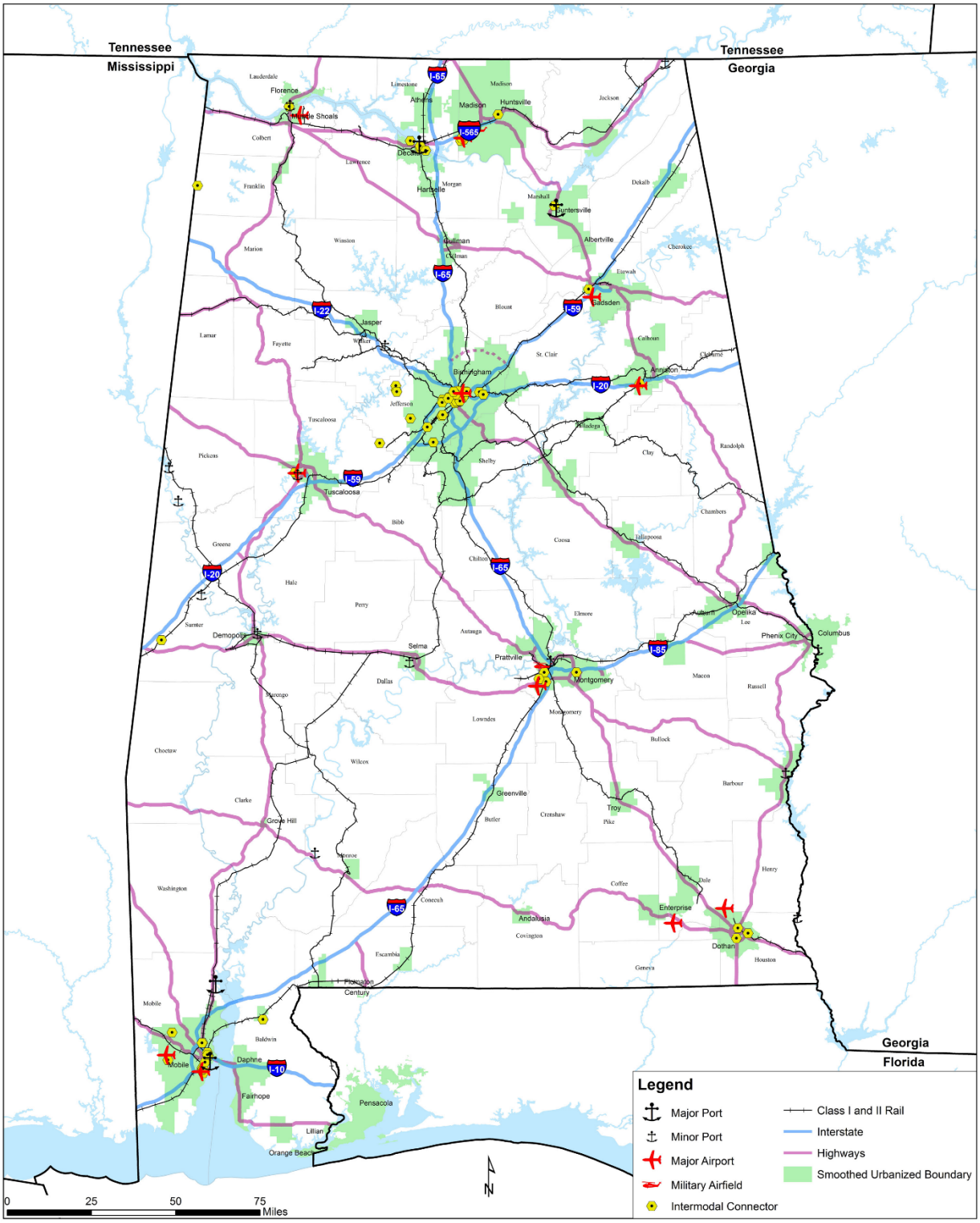
- I-20/I-59 from west of Birmingham to the Mississippi state line
- I-65 from Decatur through Birmingham to US 84
- I-20 from I-59 to US 231
- I-59 from I-20 to US 278 in Gadsden

Highlights of the projected (2040) commodity flows by truck presented on Figure S-3 include:

- Steady growth throughout the entire interstate network
- All roadway segments projected to carry more than 40,000 annual kilotons are along interstates
- The greatest freight flows (over 120,000 annual kilotons) are along:
  - I-20/59 from west of Birmingham to the Mississippi state line (especially in western Jefferson County near the Norfolk Southern Intermodal Facility and the Mercedes Plant)
  - I-65 south of Birmingham through Shelby County
  - I-65 south of Montgomery to Greenville

It is worth noting that much of the commodity flow volume to and from the Port of Mobile occurs by rail.

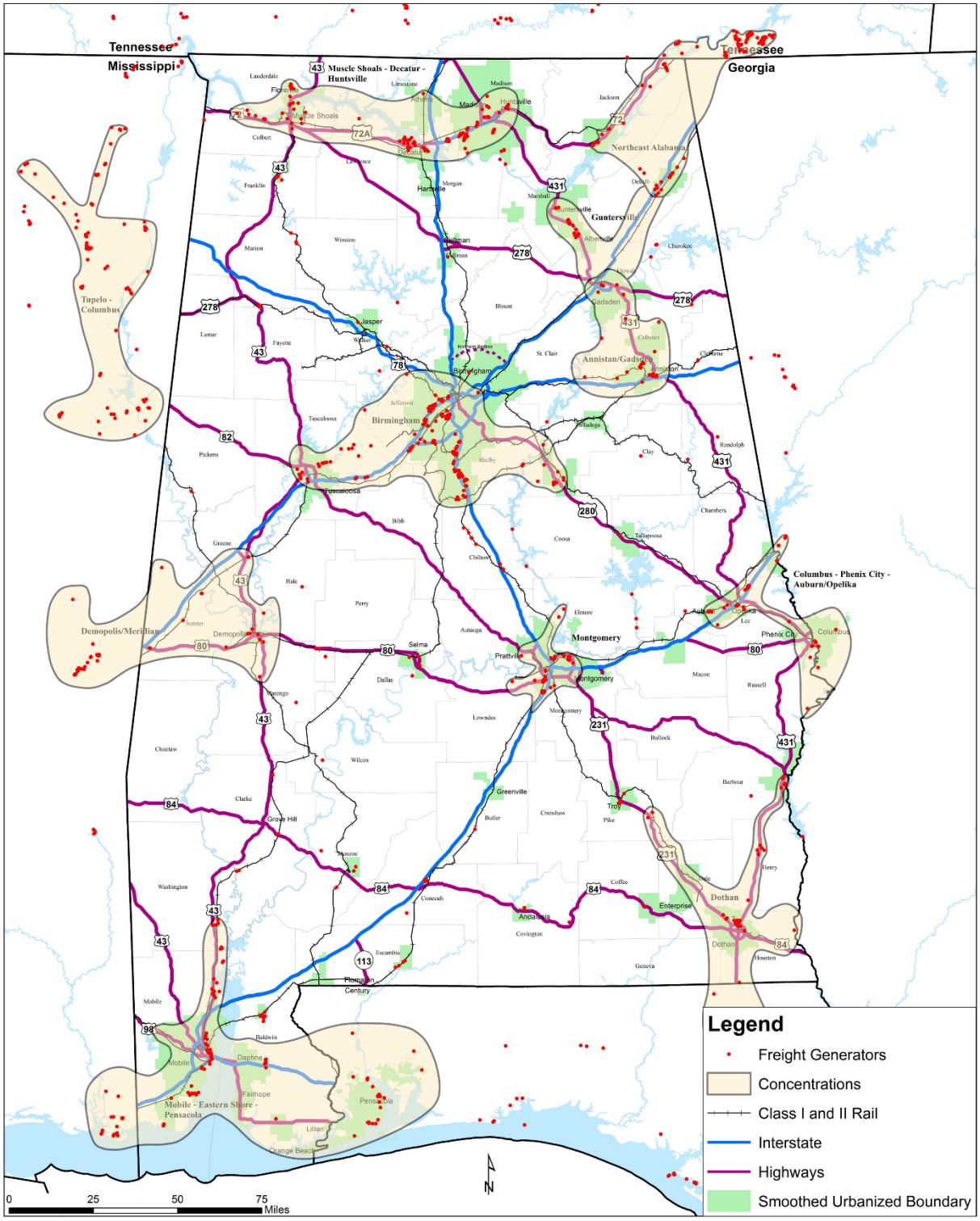
Figure S-1: 2016 Alabama Known Intermodal Connectors



Source: ALDOT Metropolitan Planning Section - 1/21/2016

Based on 2010 Census Data

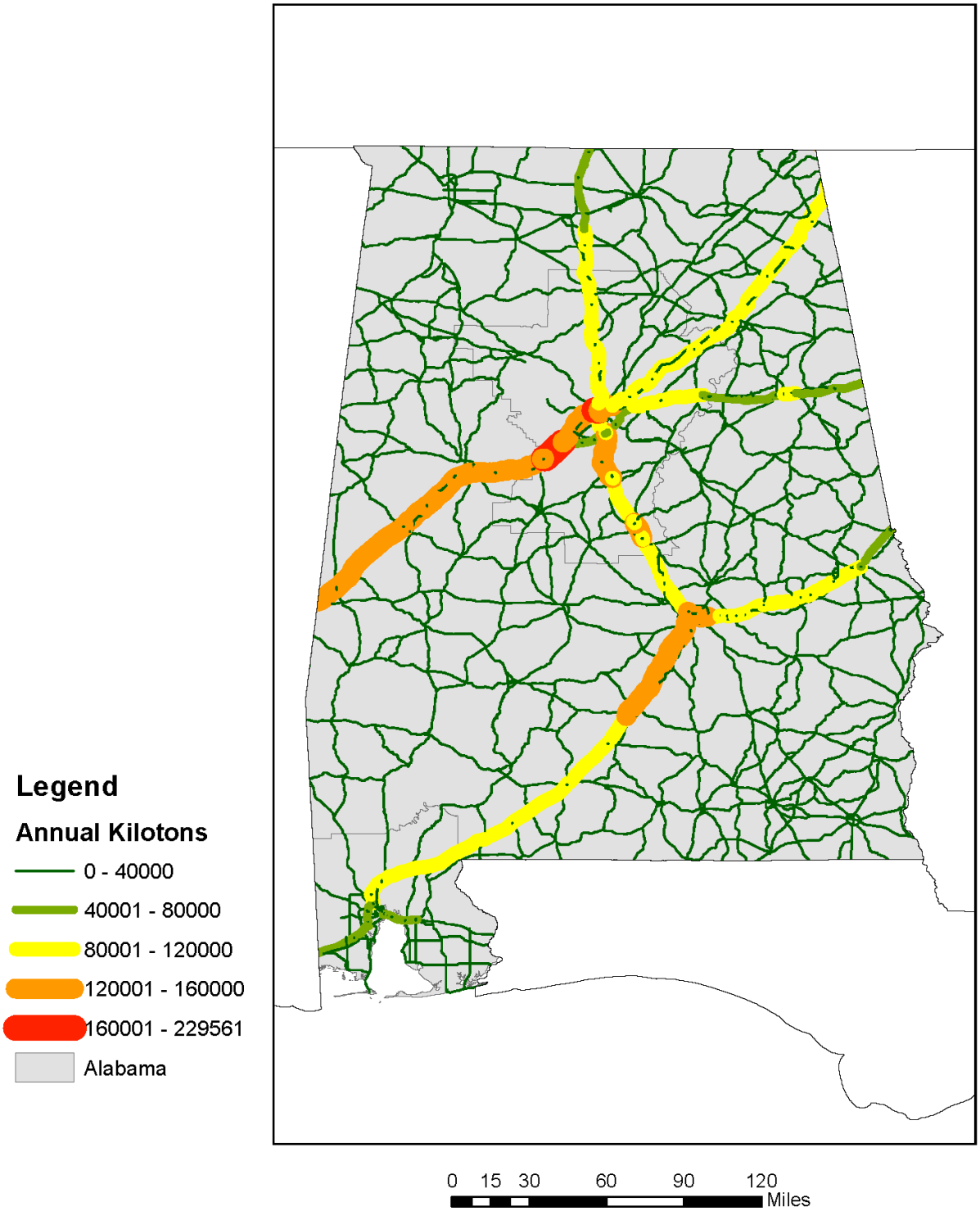
Figure S-2: Known Freight Generators



Source: ALDOT Metropolitan Planning Section - 1/25/2016

Based on 2010 Census Data

Figure S-3: 2040 Commodity Flows



Another major consideration in the development of an overall freight investment plan involves existing and projected bottlenecks throughout the state. In many cases the bottlenecks result from general automobile traffic congestion rather than directly resulting from freight traffic. Nevertheless, corridor congestion is a challenge to freight mobility regardless of the cause.

The following characteristics highlight the 2012 bottlenecks and freight volumes from the FAF3 data:

- Nearly all existing bottlenecks throughout the state are along the interstate system
- All of the roadways with over 15,000 trucks per day are interstate facilities
- The Birmingham area currently has the most facilities with bottlenecks, which includes interstate facilities as well as state facilities such as US 11 and US 280
- Existing bottlenecks are also located in Mobile along I-10 and I-65, Montgomery along I-65 and I-85, Huntsville along I-565, and in the Anniston and Gadsden areas

With respect to the projected (2040) bottlenecks and freight volumes reflected in Figure S-4:

- All of the interstate facilities except I-22 west of Walker County are projected to have freight volumes of more than 15,000 trucks per day
- The Birmingham area will continue to have the highest levels of congestion, along its interstates and principal arterials that carry freight traffic
- Conditions at all existing bottlenecks statewide are projected to worsen
- Smaller pockets of bottlenecks combined with greater freight volumes are projected to occur on non-interstate facilities such US 280, US Alternate 72 and US 231

In response to stakeholder concerns that the distribution assigned too much commodity to I-59 and too little to I-20, it must be noted that the commodity flow assignment is based on national origin destination tables. As such, discrepancies in flows along particular routes might occur because of distribution patterns and trucking company route policies that are not possible to account for in a flow assignment. Therefore, the commodity flow assignment should be used as one potential tool to support decisions, with knowledge of truck volumes being used at times to override the values presented in the output.

S-4—The Statewide Primary Freight Network

MAP-21 required FHWA to establish a national freight network to assist states in strategically directing resources toward improved movement of freight on highways. FHWA published a highway-only National Primary Freight Network under MAP-21 on October 23, 2015, which included designation of the following roadways in Alabama: I-10, I-20, I-65, I-85, I-565, and most of I-459.

The process for identifying Alabama's Statewide Primary Freight Network (PFN) began by integrating the National PFN; all facilities identified on the National PFN are included in the Statewide PFN. Next, facilities were added to represent a more comprehensive statewide network based on facility type, truck volumes, and connectivity to known truck traffic generators. The revised network included the remaining interstate facilities and key federal and state highways. This initial draft Statewide PFN was reviewed by stakeholders and modified to include the recommendations received from MPO/FAC representatives. The Statewide PFN was then finalized based on existing and projected conditions consistent with the identified criteria.

The final Statewide PFN is presented in Figure S-5. Compared to the national network, the Statewide PFN is more extensive, including more roadways with notable freight volumes and that connect facilities of statewide significance.

Figure S-4: 2040 Forecasted Bottlenecks and Freight Volumes

Significant characteristics of the Statewide PFN include:

- There are approximately 3,050 centerline miles of roadways on the Statewide PFN
- The Statewide PFN encompasses nearly four times as many roadway miles as the Alabama portion of the national freight network, which totals 775 centerline miles
- The network contains all of the interstate facilities within the state, which comprises over 1,000 centerline miles and roughly one-third of the total Statewide PFN
- A majority of the network (roughly 60 percent) is comprised of principal arterials, totaling approximately 1,825 centerline miles

With respect to the bottlenecks and congested areas:

- Only 1.3 percent of the Statewide PFN is currently operating at a volume-to-capacity (V/C) ratio greater than 1.0, which indicates some level of congested conditions
- By 2040, 35 percent of the Statewide PFN is projected to operate at V/C ratios greater than 1.0
- As shown in Figure S-4, many facilities on the Statewide PFN will operate at V/C ratios much higher than 1.0 and are projected to be severely congested
- The growth in non-truck traffic is a major contributing factor to the significant increase in projected network V/C ratios exceeding 1.0

S-5—Freight Investment Plan

Chapter 5 presents the improvement projects identified as the most critical for freight mobility throughout the state. The majority of improvements were gleaned from existing financially-constrained (funding identified) and visionary (unfunded) plans by ALDOT and the regional MPOs.

Development of this plan was initiated under the guidance of MAP-21 but completed after passage of the FAST Act in December 2015. Key changes enacted by the FAST Act with respect to freight funding include:

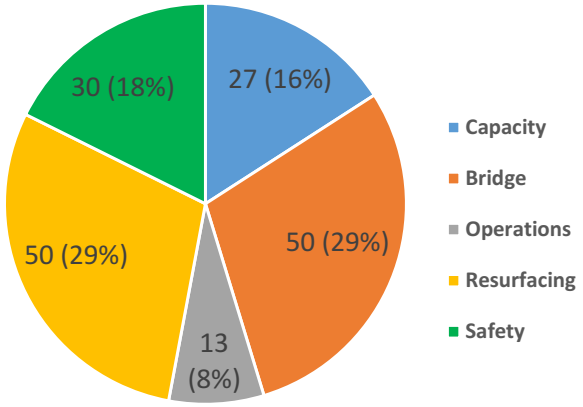
- The provision for increased federal share (95 percent for interstate/90 percent non-interstate) for significant freight projects has been repealed
- The National Highway Freight Program (NHFP) apportions funds from the Highway Trust Fund to projects specifically to increase freight mobility
- A project must be specifically called out in a Freight Investment Plan within a Statewide Freight Plan meeting the requirements of the FAST Act to be eligible for apportioned freight funds
- It provides funding specifically for projects that serve to facilitate better intermodal freight connectivity
- States have until December 2017 to adopt a Statewide Freight Plan meeting FAST Act requirements

FHWA is in the process of developing more detailed guidance for the implementation of the FAST Act freight planning policies. More specifically, it is anticipated that clarification will be received:

- The eligibility for NHFP funds for projects on the Statewide Primary Freight Network (PFN) and other facilities that are not on the National Highway Freight Network
- The specific requirements for Freight Investment Plans within Statewide Freight Plans
- The ability and procedures to transfer freight apportionments to other program areas
- Further definition of intermodal freight projects

To develop a baseline of improvements, planned and programmed improvements in ALDOT's Comprehensive Project Management System (CPMS) were reviewed to inventory those located along the Statewide PFN facilities and which indicate a construction phase scheduled prior to 2030. Figure S-6 shows the breakdown of resulting projects by improvement type, including the number projects in each category and each category's percentage relative to the total (170 projects).

Figure S-6: Breakdown of Primary Freight Network Projects within the CPMS through 2030



Of the 170 projects planned for construction along the Statewide PFN in the ALDOT work program through 2030, a total of 27 (16 percent) are capacity improvements. Significant improvements include:

- Widening the I-10 Bayway and Mobile River bridge (2020) from Broad Street to Spanish Fort from four to eight lanes
- Widening I-10 from CR-39 to CR-59 in Mobile County (2023) from four to six lanes
- Widening I-59/I-20 in Tuscaloosa County (2018) and Jefferson County (2023-2025) from four to six lanes
- Widening I-65 in Shelby County (2021) and Cullman County (2025) from four to six lanes
- Widening I-85 in Montgomery County (2030) and Lee County (2030) from four to six lanes
- Widening I-565 from I-65 to the Madison County line (2020-2021) from four to six lanes
- Extending I-22 from east of I-65 to US 31 (2023) as a new four-lane facility

These improvements address several existing and projected bottlenecks, specifically:

- The I-59/I-20 improvements in Tuscaloosa and Jefferson counties address both existing and projected areas of congestion and high truck traffic volumes
- The segment of I-65 to be widened in Shelby County has been identified by MPO staff as a congested area and a critical link to freight traffic
- The segment of I-65 in Cullman County from Cullman south to the Blount County line also carries a high level of freight traffic and is projected to have congested conditions in 2040
- The segment of I-565 from downtown Huntsville to the Madison County line carries a high level of freight traffic and is projected to have congested conditions in 2040
- All of the segments of I-10 through Mobile County and Spanish Fort are currently experiencing high levels of traffic congestion and freight traffic that are projected to worsen by 2040

The remaining 143 projects on the Statewide PFN with construction phases in CPMS through 2030 are maintenance and/or operations (MO) projects (bridge, resurfacing, safety, and operations). Characteristics of the MO improvements within the CPMS, as well as several key projects for each, follow:

- Bridge – 50 projects, including 14 projects along the interstate system
  - A series of improvements along I-65 within Montgomery, Shelby, and Elmore counties
  - I-10 tunnel rehabilitation in Mobile County
  - I-85 bridge widenings within Montgomery and Macon counties
  - I-65 crossings of the Tennessee River

- Resurfacing – 50 projects, including 39 projects along the interstate system
  - 7 projects along I-20/59 west of Birmingham in Jefferson, Tuscaloosa, and Greene counties
  - 15 projects along I-65 throughout the entire length of the state, including at the intersection of SR 157 in Cullman County and from Main Street to SR 158 in Mobile County
- Safety – 30 projects, including 25 projects along the interstate system
  - Slide correction improvements along I-20/59 within the Birmingham area
  - 13 roadway or interchange lighting projects
  - A significant non-interstate safety improvement at the intersection of SR 20 and SR 157
- Operations – 13 projects
  - I-10 interchange modifications from Texas Street to West Tunnel entrance in Mobile County
  - Interchange improvements at I-65 and US 31 in Shelby County
  - Interchange modifications at I-85 and Eastern Parkway (US 231/431) in Montgomery County
  - Access management plans along US 43 in Mobile County and US 82 in Tuscaloosa County

In reviewing MPO LRTPs statewide for projects along with Statewide PFN with potential to improve freight mobility, the following capacity improvements with construction scheduled after 2030 (therefore unfunded and considered 'visionary') were identified:

- Widening/relocating SR 53 from north of Harvest Road to I-65 from two to four lanes (Huntsville MPO)
- Widening I-565 from I-65 to Wall Triana Highway (Huntsville MPO)
- Constructing Northern Beltline (SR-959) from I-59 to I-65 (Birmingham MPO)
- Widening I-59/I-20 from I-20 Interchange to Arkadelphia Road (Tuscaloosa MPO)
- Widening I-85 from SR 271 to SR 126 (Montgomery MPO)
- Widening I-459 from I-59 to Morgan Road (Birmingham MPO)

After comparing existing and projected bottlenecks against currently planned and programmed projects, projected deficiencies on these roadway segments along the Statewide PFN currently have no specific improvements identified to address congestion levels:

- I-65 from the I-85 interchange to SR 14 in Prattville
- I-459 from I-20 interchange to I-20/59 west of Birmingham

As previously noted, projects that promote intermodal freight connectivity are eligible for FAST Act funding and encouraged through the 2016 TIGER Grant focus on economic competitiveness. Potential intermodal projects that will increase freight mobility include:

- Mobile Port Inter-Terminal Connector Road
- Theodore Port Rail On/Rail Off Terminal
- McAshen Drive improvements from I-20 to Norfolk Southern Terminal

In order to facilitate freight mobility throughout the state, ALDOT will continue to promote opportunities for intermodal connectivity and interagency coordination.

Roadway capacity and MO projects are not the only improvements with potential to facilitate freight mobility throughout the state. In reviewing the CPMS, a total of 68 railroad and/or intermodal projects that contain a construction phase prior to 2030 were identified. Of these, 40 are railroad crossing safety improvements and 25 are bridge replacements or repairs over railroad facilities. The remaining projects consist of improvements to the Norfolk Southern Intermodal Facility, a new bridge on Hamilton Boulevard

over the CSXT railroad crossing in Mobile County, and a railroad restoration project in Birmingham. While none of these projects are located along the Statewide PFN, maintaining safe railroad bridge crossings and railroad operations is critical to freight mobility statewide.

Several MPO representatives provided input on problematic railroad crossings within their regions for which future improvements should be considered, in coordination with the appropriate railroad(s):

- At-grade rail crossings on many east-west roadways through Mobile; most notably, Florida Street, Hamilton Boulevard, Moffat Road, Springhill Avenue, Dauphin Street, and Government Boulevard
- The crossing of AL 119 in downtown Alabaster

One critical issue identified by FHWA is the provision of truck parking to promote safe conditions for truck drivers to rest and park. To gain a better understanding of available facilities, public and private truck parking resources throughout the state were inventoried. Of the State's 6 welcome centers and 19 rest stops, all but one are located along the Statewide PFN. Similarly, all the facilities of the two largest private providers in the state (Love's and Travel America-Petro Express) are located along the Statewide PFN. All 8 Travel America-Petro Express facilities and 10 of the 12 Love's facilities are located along the interstates.

Another objective of the FAST Act and MAP-21 is to promote innovative solutions and the implementation of intelligent transportation systems (ITS) to facilitate freight mobility. A review of the CPMS for ITS projects scheduled for construction prior to 2030 identified eight ITS improvements in the Birmingham area, including signalization and monitors throughout the region. ALDOT will continue to explore the implementation of ITS as technologies continue to evolve and become more cost efficient.

S-6 —Freight Performance Monitoring Process

MAP-21 called for the establishment of performance measures. In response, FHWA began working through the process toward a Final Rule, which is still ongoing. When complete, federal guidance on setting performance targets and establishing an associated reporting process for states and MPOs will be released. In the absence of federal rules, a universe of potential performance measures was identified based on available federal policy to date, a peer review process, and input from MPOs and stakeholders. The performance measures developed on a statewide level for this Freight Plan should provide ALDOT with a snapshot of the overall performance of the Statewide PFN and a baseline from which to develop performance targets for freight mobility. It will be important to periodically re-evaluate the performance measures as more data becomes available, analysis tools evolve, and federal guidance is developed.

Establishing performance targets is the means by which states and MPOs can evaluate network mobility as a whole and the effectiveness of improvements towards meeting mobility goals. In turn, this 'performance monitoring process' informs the process by which identified improvement projects are prioritized for implementation. Given this direct linkage between performance and prioritization, performance measures were developed at two levels:

- Statewide Level – It is important to establish state metrics based on current conditions so that benchmarks can be developed to monitor improvements in 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.

The FAST Act specifically calls for the update of the Statewide Freight Plan every five years, which could serve as an initial benchmark for developing monitoring procedures. Otherwise, there is currently no specific federal guidance regarding the frequency of performance monitoring and/or reporting.

The universe of potential Freight Plan performance measures is provided in Table S-1. Of particular note:

- The relationship between goals, performance measures, and available data sources is clearly shown. 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 the higher level and broader assessment appropriate for statewide analysis.
- The selected measures reflect the aim of utilizing readily available data and providing results in a way that can be easily understood by users, policymakers, and the public.

Table S-1: Universe of Potential Statewide Freight Plan Performance Measures

Statewide Freight Plan Goals	Performance Measures—Statewide Level (PFN)	Performance Measures—Corridor Level	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 Traffic Model
	Vehicle miles of travel (VMT) of truck traffic along PFN	VMT of truck traffic	Statewide Traffic Model
	Total number of pass-thru trucks through Alabama along PFN	Overall truck volumes	Statewide Traffic Model
		Percent truck volume of total volumes	Statewide Traffic Model
Goal 2: Ensure a state of good repair along priority freight corridors throughout 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 Maintenance & Operations (MO) funding spent along the PFN vs. statewide (Minor Arterials and up)	Not applicable	Comprehensive Project Management System (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

Statewide Freight Plan Goals	Performance Measures—Statewide Level (PFN)	Performance Measures—Corridor Level	Data Source(s)
Goal 3: Improve economic benefits by supporting public and private sector investment in the statewide freight network	Annual hours of truck delay along the PFN	Annual hours of truck delay	Statewide Traffic Model
	Statewide annual funds invested by ALDOT for freight-related projects vs. overall projects (capacity and MO)	Not applicable	Comprehensive Project Management System (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
	Percentage 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	Critical Analysis Reporting Environment (CARE)
	Level of safety infrastructure along at-grade crossings along the PFN	Level of safety infrastructure along at-grade crossings	ALDOT Section 130 Program
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 the Statewide Transportation Improvement Program (STIP)	Presence of ITS infrastructure components (e.g., Dynamic Message Signs, signal coordination, Traffic Management Center)	CPMS (Statewide) Project Sponsor (Corridor)
	Percentage of total freight improvement costs dedicated to 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 Traffic 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)
	Percentage of all plans developed through ALDOT administered funds with freight components that address Title VI compliance (includes Statewide Freight Plan, STIP, 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)

MPOs are also required by MAP-21 and the FAST Act to set targets for freight performance. However, no specific FHWA guidelines for performance monitoring have been developed for MPOs at either a network or corridor level at this time. Furthermore, there is no specific requirement that MPOs adopt a regional freight plan or element within their LRTPs. In the absence of specific guidance, it was presumed that principles guiding regional policy should be consistent with those at the statewide level.