

# GREATER CHARLOTTE REGIONAL FREIGHT MOBILITY PLAN

Prepared for:



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- Appendix E – Economic Context and Land Use Analysis
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# 1 INTRODUCTION

Centralina Council of Governments (CCOG), in concert with regional partners for the 14-county Greater Charlotte Bi-State Region (Figure 1.1), proposes to support the region’s communities, transportation planning organizations, and manufacturing and logistics industries by developing a Regional Freight Mobility Plan (Freight Plan) designed to:

- Identify ways to effectively and consistently address freight congestion and key bottlenecks,
- Identify links that connect mobility of freight to regional economic development goals,
- Prioritize improvements to reduce barriers to efficiency,
- Promote effective land use in both urban and rural areas of the Region to support freight mobility, business development and job growth, and
- Mitigate environmental impacts related to mobility barriers across the Region.

Figure 1.1: Greater Charlotte Bi-State Region



CCOG, in collaboration with regional partners, initiated work on this Freight Plan in June 2015 and finalized in December of 2016. This plan includes an assessment of the needs of freight movement and freight-oriented land uses, and current capabilities for meeting those needs. The gap between needs and capabilities have been addressed through sector-specific and inter-disciplinary strategies, which are presented in this final plan for endorsement and approval by the area partners.

As the movement of goods transcends jurisdictional boundaries, freight-related decisions can have wide-ranging impacts within and outside of the region. This Freight Plan is consistent with other regional efforts, making sure freight priorities complement, or do not conflict with, other important initiatives.

The Freight Plan is consistent with North Carolina and South Carolina statewide transportation planning studies as well as regional and local jurisdiction transportation planning initiatives. The Freight Plan was developed with the Moving Ahead for Progress in the 21st Century (MAP-21) legislation in 2012 and more recent FAST Act legislation in 2015 in mind to ensure the analysis and recommendations are consistent with federal legislative guidance.

## 2 THE PURPOSE OF THIS FREIGHT PLAN

This Freight Plan should be used for three principal purposes:

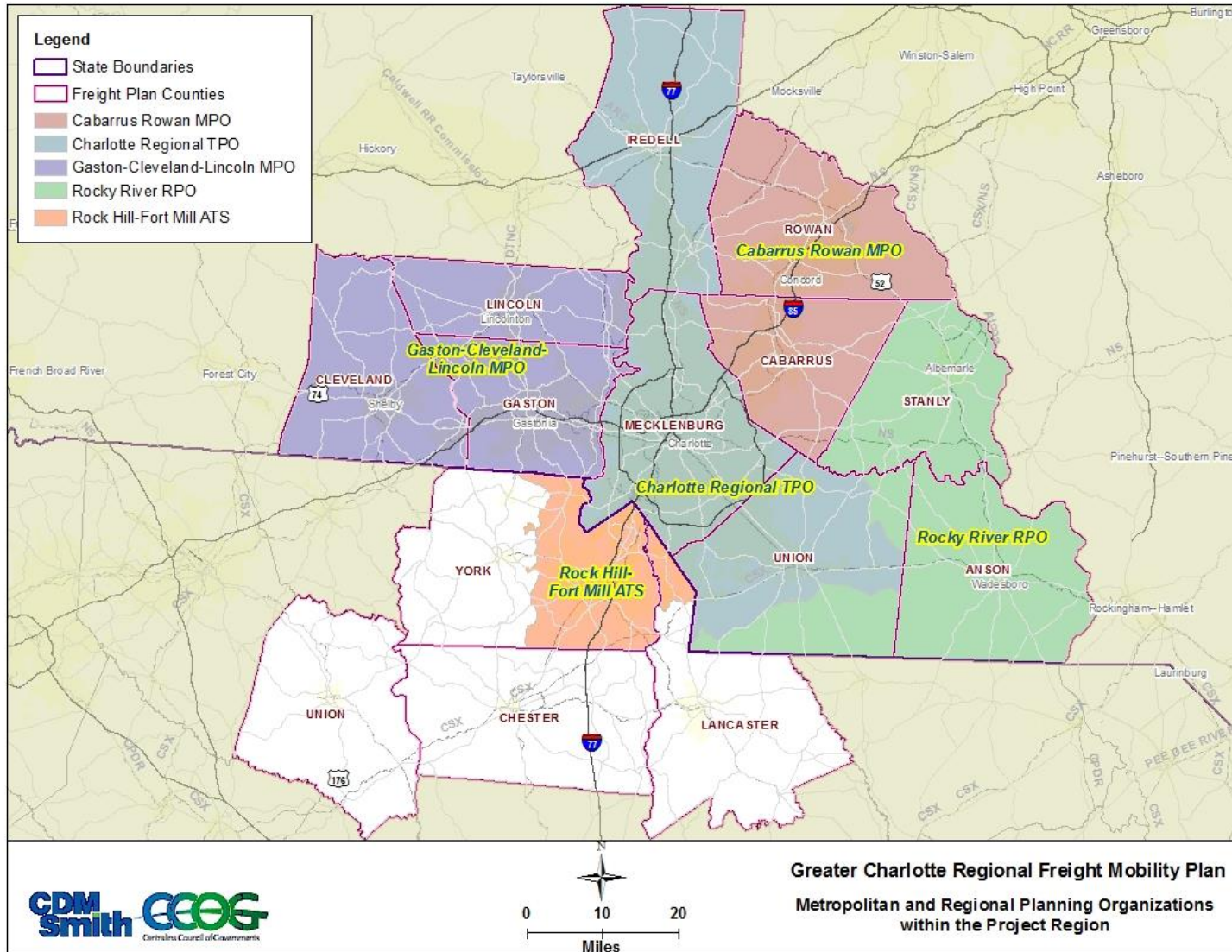
1. **Data resource:** a great deal of data has been compiled in the development of this plan. Warehoused by CCOG, infrastructure, parking, land use and other relevant data are available for reference for implementation and ongoing planning efforts.
2. **Provide freight related recommendations for inclusion in state and local land use and transportation plans:** throughout this Freight Plan, recommendations for performance measures, prioritization framework and recommended policies, programs and projects that should be considered for inclusion in state freight plans and local land use and transportation plans.
3. **Serve as a cornerstone for expanded and sustained regional coordination through the Council of Governments:** CCOG has initiated valuable dialogue across the public and private sectors, raising awareness of freight mobility and its role in the regional economy. This plan should serve as the foundation for additional conversations, coordinated planning efforts and ongoing campaigns supporting freight mobility.

## 3 REGIONAL COLLABORATION

The Freight Plan is a multi-jurisdictional public-private collaboration effort lead by the CCOG in partnership with Metropolitan Planning Organizations (MPOs), Rural Planning Organization (RPO), Federal Highway Administration, U.S. Department of Commerce Economic Development Administration, North Carolina Department of Transportation (NCDOT), South Carolina Department of Transportation (SCDOT), local governments, economic development organizations, and private rail and trucking companies, logistics and distribution firms. The Freight Plan documents the freight transportation system within the 14 counties of the Greater Charlotte Region which includes 10 counties in North Carolina and four counties in South Carolina, as shown in **Figure 3.1**. Regional partners had the opportunity to participate in the development of the Freight Plan by serving on one of three committees: Coordinating Committee, Steering Committee or Freight Advisory Committee. A complete overview of the public engagement and committee participation process is included in **Appendix A – Summary of Public Information and Stakeholder Feedback**.



Figure 3.1: Freight Plan Study Area



Source: CDM Smith

## 4 THREE PILLARS OF THIS FREIGHT PLAN

Critical to the success of this Freight Plan is the examination and incorporation of the three pillars of planning in this community: **Land Use, Economic Development, and Transportation.**

The linkages between freight mobility and the health of a regional economy have become a tenet of transportation and land use planning in recent years. In both the MAP-21 and FAST Act legislation, freight considerations have increased in significance for transportation planning, identifying and tracking performance measures in project prioritization. The role of freight in the economy is evident in a variety of areas. The number of trucks on the road are evidence of regional economic activities, such as construction or manufacturing. The economic impact of transportation improvement projects can be estimated in both direct (job creation during construction, for example) and indirect (access to developable real estate for the introduction of industrial, warehousing or retail jobs, for example) impacts. For the Charlotte region, freight mobility planning is critical to help the region's planners and leadership identify how to find the balance between supporting the current demand for freight mobility, by all modes of transport, as well as identify the future demands and potential for land use development that is supported by the existing and planned transportation infrastructure.

To work toward this balance, planners and the traveling public need a comprehensive understanding of the economic activity and the transportation system required to move freight within the Charlotte region. The following sections are presented to set the context of the remainder of the Freight Plan.

### 4.1 POPULATION TRENDS

The Charlotte metropolitan region has experienced steady growth in population and employment trends. To best understand the land use patterns of the region, the Freight Plan considered population and employment trends to establish the context of land use planning across the region. Growth in population as an indicator of the general health of the community, and the employment trends demonstrate the health of the economy and what industries support the region.

Population growth in North and South Carolina is well over the national average at 5.3 and 5.5 percent (respectively) compared to 4.1 percent nationally between 2010 and 2015, as detailed in **Table 4.1**. This signals healthy growth in population, which is typical for the Southeastern United States. This also signals to planners that the community is not in a decline and that forecasts in traffic demand will increase for autos and trucks, and the retail demands will also continue to increase.

*Table 4.1: North Carolina, South Carolina, and U.S. Population Comparison (2010 and 2015)*

Population	US	NC	SC
2010	308,758,105	9,535,692	4,625,401
2015	321,418,820	10,042,802	4,896,146
% Change	4.1%	5.3%	5.9%

*Source: US Census*

The Greater Charlotte Region continues to grow, even ahead of the national and state totals. Between 2010 and 2014, the 14-county study area grew 6.6 percent with the bulk of that growth



happening in the more urban areas of Mecklenburg, Union, Iredell, Cabarrus, Lincoln Counties in North Carolina and in York County, SC, as detailed in **Table 4.2**.

*Table 4.2: Regional Population (2010, 2014, and 2040)*

Population	2010	2014	2010-2014 % Change	2040	2014-2040 % Change
Union County, North Carolina	201,292	218,568	8.6%	389,521	78.2%
Mecklenburg County, North Carolina	919,628	1,012,539	10.1%	1,698,405	67.7%
Iredell County, North Carolina	159,437	166,675	4.5%	263,091	57.8%
Cabarrus County, North Carolina	178,011	192,103	7.9%	291,896	51.9%
Lincoln County, North Carolina	78,265	79,829	2.0%	120,488	50.9%
York County, South Carolina	226,073	245,346	8.5%	365,269	48.9%
Rowan County, North Carolina	138,428	138,630	0.1%	167,696	21.0%
Anson County, North Carolina	26,948	25,765	-4.4%	30,177	17.1%
Lancaster County, South Carolina	76,652	83,160	8.5%	96,259	15.8%
Stanly County, North Carolina	60,585	60,600	0.0%	70,065	15.6%
Chester County, South Carolina	33,140	32,337	-2.4%	37,100	14.7%
Union County, South Carolina	28,961	27,876	-3.7%	25,800	-7.4%

*Source: US Census; SCDOT and NCDOT Statewide Travel Demand Model Forecasts*

## 4.2 ECONOMIC INDICATORS

One of the key drivers of population growth within a region is the availability of jobs. As the population of the greater Charlotte region grows, the demand for housing, retail trade, commercial and professional services, and other land uses absorbs the most strategic locations pushing business and industry further and further away from the employees they need. As the journey to work becomes more expensive it is often the people who truly need access to employment opportunities who are least able to afford the cost of getting to work.

More and more employers recognize the value of integrating places where people work with places where people live. When many businesses evaluate locations for facility expansion they ask about transit services, ride sharing, and affordable housing near business concentrations. Land assets that can support freight facilities and services and a growing economy is essential to the Charlotte region's economic future. From an economic developer's perspective, the regional freight land use analysis is an in-depth study of a key value proposition, now can the region preserve strategic land assets where there are critical freight assets to support business expansion and new industry development.

Consider the relationship between freight, manufacturing, and employment. Over 140,000 jobs in the Greater Charlotte Region are in manufacturing and this sector is a transportation dependent industrial sector expending over 9 percent on transportation per dollar of output.<sup>1</sup> The Freight Plan and Appendix E give economic developers the data required to make a strong business case for preserving strategic industrial sites in the region that link priority freight corridors with existing

<sup>1</sup> *Centralina Manufacturing Ecosystem Development Strategy, September, 2015*

freight acreage. The manufacturing sector in the Charlotte region employs nearly 12 percent of the region's workforce and equally important 93 percent of total goods exports from the State of North Carolina are manufactured goods that support an additional 164,023 jobs in the state.<sup>2</sup>

Between 2012 and 2013 there was a 3.6 percent increase in employment throughout the region. During this period, most of the job increases have occurred in Mecklenburg County, with only Lincoln County, NC and Union County, SC showing employment decreases, as detailed in **Table 4.3**.

Forecasting to 2040, though, demonstrates a slightly different pattern of growth in jobs. Nine of the fourteen study area counties are expected to see the number of jobs at least double by 2040.

*Table 4.3: Regional Employment (2012, 2013, and 2040)*

County	2012	2013	2012-2013 % Change	2040	2013-2040 % Change
Union County, North Carolina	45,929	47,496	3.4%	134,508	183.2%
Cabarrus County, North Carolina	56,568	57,722	2.0%	145,042	151.3%
Anson County, North Carolina	4,952	5,089	2.7%	12,423	144.1%
Chester County, South Carolina	6,414	6,709	4.6%	15,500	131.0%
Mecklenburg County, North Carolina	535,996	558,911	4.3%	1,283,517	129.6%
Lincoln County, North Carolina	17,055	16,970	-0.5%	37,602	121.6%
Iredell County, North Carolina	58,237	60,162	3.3%	132,706	120.6%
York County, South Carolina	67,630	68,940	1.9%	148,706	115.7%
Lancaster County, South Carolina	15,037	16,615	10.5%	33,263	100.2%
Stanly County, North Carolina	15,355	15,830	3.1%	30,112	90.2%
Cleveland County, North Carolina	27,688	28,081	1.4%	53,783	90.2%
Gaston County, North Carolina	62,045	63,311	2.0%	117,977	86.3%
Rowan County, North Carolina	39,756	41,848	5.3%	68,834	64.5%
Union County, South Carolina	6,081	5,968	-1.9%	9,500	59.2%

*Source: US Census; SCDOT and NCDOT Statewide Travel Demand Model*

In addition to understanding employment trends, planners track trends in exports to set the context for regional freight planning. Exports are a critical component of a regional economy. Not only do exports represent trade, they also stimulate local economic activity by creating employment, increased production and revenues. In 2015, Charlotte's top export markets, in order, were Mexico, Canada, China, Germany and France, as detailed in **Table 4.4**.

*Table 4.4: Top Charlotte Region Export Countries (2015)*

Country	Value	Share
Mexico	\$5.57 billion	39.79%
Canada	\$2.2 billion	15.96%
China	\$584 million	4.17%
Germany	\$458 million	3.27%
France	\$426 million	3.04%

*Source: Office of Trade and Economic Analysis.*

<sup>2</sup> North Carolina Manufacturing, National Association of Manufacturing 2015

In 2015, top export sectors from Charlotte were transportation equipment, machinery (except electrical), chemicals, plastics and rubber products, and textiles and fabrics, as shown in **Table 4.5**. Charlotte is also a major metropolitan area exporter of textiles and fabrics; primary metal manufacturing; fabricated metal products; nonmetallic mineral products; and textile product mills.

*Table 4.5: Top Charlotte Region Export Sectors (2015)*

Sector	Value	Share
Transportation Equipment	\$4.3 billion	30.6%
Machinery, Except Electrical	\$2.3 billion	16.7%
Chemicals	\$1.8 billion	13.1%
Plastics and Rubber	\$854 million	6.1%
Textiles and Fabric	\$743 million	5.3%

*Source: Office of Trade and Economic Analysis.*

In 2015, the Charlotte metropolitan area was the 23rd largest export market in the United States, with merchandise shipments totaling \$14 billion. This reflects a 9 percent increase over the previous year. This is up \$7.7 billion (122 percent) from the \$6.3 billion in merchandise exported in 2012. In 2014 (latest data available), 3,074 small- or medium-sized exporters (SMEs), companies with fewer than 500 employees, exported goods from the Charlotte metropolitan area.

### 4.3 TRANSPORTATION SYSTEM CONDITIONS

Coupled with the growth in economic activity in the areas of manufacturing and distribution, the growth in congestion on the region's highways and railroads has continued to frustrate commuters and freight transporters alike. According to the Texas Transportation Institute (TTI) *2015 Annual Mobility Scorecard*, dated August 2015, Charlotte NC-SC region ranks 29<sup>th</sup> in the nation for Travel Time Index (1.23) and 47<sup>th</sup> in the nation for annual truck congestion cost of \$131 million.

**Travel time index** is defined as the ratio of travel time in the peak period to the travel time at free flow conditions. **Truck congestion cost** is defined as the value of increased travel time and other operating costs of large trucks, estimated at \$94.04 per hour of truck time and the extra diesel consumed delay based on average cost per gallon. These metrics become significant when comparing the Charlotte region to peer cities particularly when perspective companies are looking to relocate or expand into a region. A comparison in these performance measures are presented in **Table 4.6**.

In summary, the Charlotte Regional Freight Mobility Plan represents a comprehensive planning effort that includes considerations of the demands of land use trends and population growth, economic indicators, and the performance of the transportation network connecting the region. With these considerations, the plan synthesized both data analysis and stakeholder feedback to produce this plan document. This Freight Plan is inclusive of recommendations to support a balanced approach to regional planning to support the safe, reliable and efficient movement of goods into, out of, and through the Charlotte region.

Table 4.6: Comparison of Highway Performance Measures, Southeastern United States (2015)

Urban Area	Travel Time Index		Truck Congestion Cost	
	Value	Rank	(\$million)	Rank
Atlanta, GA	1.24	25	434	13
<b>Charlotte, NC-SC</b>	<b>1.23</b>	<b>29</b>	<b>131</b>	<b>47</b>
Charleston, SC	1.23	29	126	48
Virginia Beach, VA	1.19	42	112	52
Columbia, SC	1.15	76	104	55
Knoxville, TN	1.14	81	87	60
Raleigh, NC	1.17	54	71	66
Richmond, VA	1.13	88	68	69
Greensboro, NC	1.1	99	27	93
Winston-Salem, NC	1.11	97	21	96

Source: Texas Transportation Institute, 2015 Urban Mobility Scorecard, August 2015

## 5 PLAN DEVELOPMENT

The Greater Charlotte Regional Freight Plan is the product of extensive discussions with public and private sector partners combined with an in-depth analysis of the region’s freight transportation system condition and performance. The plan development workflow is illustrated in **Figure 5.1**. This Freight Plan document provides an overview of the plan development, key points from analyses, recommendations, and implementation guidance. Additional technical resources are provided in greater detail through a series of appendices, as referenced throughout this document.

Figure 5.1: Freight Plan Development Process



The Freight Plan consists of technical analyses, policy reviews, outreach, and consideration of regulatory requirements, such as the following:

- **Legal and Regulatory Requirements** – The Freight Plan is aligned with the requirements in the recent Federal Fixing America’s Surface Transportation Act (FAST Act) as well as the South Carolina Freight Plan. The North Carolina Freight Plan is currently in development and will incorporate some of the analysis and recommendations identified in this plan. This work is highlighted in Chapter 2 of the Freight Plan and detailed in **Appendix E – Economic Context and Land Use Analysis**.
- **Strategic Direction** – A critical first step in the planning process was to establish a vision, goals, and objectives that articulate the region’s long-range direction for freight movement. This is highlighted in Chapter 3 of the Freight Plan and detailed in **Appendix C – Goals, Objectives, and Prioritization of Freight Projects and Policies**.
- **Existing System Review and Needs Analysis** – A comprehensive inventory of the region’s multimodal freight transportation infrastructure and identification of issues related to safety, bottlenecks, freight demand, and freight mobility provided a starting point for consideration of modal needs. Highlights of this inventory are included in Chapter 2 of the Freight Plan with supporting details in **Appendix B – Existing Conditions**.

- **Future Freight Demand Analysis** – An overview of freight flow forecasts for goods moving to, from, and within the Charlotte, North Carolina region by domestic mode and commodity type. This work is highlighted in Chapter 2 of the Freight Plan and detailed in **Appendix D – Freight Forecasts**.
- **Economic and Land Use Analysis** – An overview of the land uses identified in the CONNECT Our Future planning effort was utilized to identify opportunities to plan for Corridors and Concentrations for freight related land uses and future economic development purposes. This work is highlighted in Chapter 2 of the Freight Plan and detailed in **Appendix E – Economic Context and Land Use Analysis**.
- **Recommendations and Best Practices** – The existing conditions analysis coupled with the future freight demand, economic, and land use analyses informed a set of recommendations and best practices for projects, programs, and policies. Recommendations are included in Chapter 4 of the Freight Plan and additional backup detail is included in **Appendix G – Recommendations**.



## 6 STAKEHOLDER ENGAGEMENT PROCESS

Stakeholder involvement was critical to the development of the Freight Plan. To understand the freight transportation concerns of the local governments and freight transportation needs of users and operators in the region, CCOG used several methods to solicit stakeholder input including coordinating committee meetings, steering committee meetings, freight advisory council meetings, stakeholder interviews, an online survey for freight operators, and the CCOG website. A summary of each engagement method is below. A complete overview of the public engagement and committee participation process is included in **Appendix A – Summary of Public Information and Stakeholder Feedback**.

### 6.1.1 Coordinating Committee

The Coordinating Committee consisted of 22 representatives from CCOG member Metropolitan Planning Organizations (MPO) and Rural Planning Organizations (RPO), representatives from North Carolina and South Carolina Departments of Transportation (NCDOT) and SCDOT), and the Federal Highway Administration (FHWA). The Coordinating Committee was responsible for overseeing the overall technical aspects of the Freight Plan as the ‘front-line’ reviewers and met eight times during the development of the Freight Plan.

### 6.1.2 Steering Committee

The Steering Committee was responsible for the policy level elements of the Freight Plan and served as advisors to the Coordinating Committee by reviewing their recommendations and findings. The 63-member committee consisted of representatives from local jurisdictions, regional and state transportation partners, economic development organizations, and representatives of freight-related organizations and businesses. The members met five times during the development of the Freight Plan.

### 6.1.3 Freight Advisory Committee

The Freight Advisory Committee (FAC) was established by identifying members during the Freight Plan development process. The FAC is composed of members of the private sector including firms related to trucking, rail, and aviation. The purpose of the FAC is to improve freight operations in the region on an on-going basis and provide the region with a more detailed understanding of freight issues that the region will face in the coming years. The FAC met twice during the Plan development and will continue to assist in the implementation of this Freight Plan.

### 6.1.4 Surveys

A web-based survey was conducted from June through September 2016 using SurveyMonkey® to solicit feedback from trade organizations including the North Carolina Trucking Association, South Carolina Trucking Association, and other key freight stakeholders in the region. The survey questions were designed to obtain quantifiable data related to the performance and condition of the freight transportation system. The full summary of the survey questions and results is included in **Appendix A**.

### 6.1.5 Interviews

Telephone surveys were conducted in August, September, and October 2016 with representatives of the freight industry to solicit input on trends and physical barriers which impact freight movement; specific regional freight mobility issues; performance measures, issues of regional coordination and required resources. The timing of these surveys was near the completion of the Freight Plan development and reflected the feedback from the Coordinating Committee, Steering Committee, the Freight Advisory Committee and the initial feedback from the online survey. With this in mind, the survey audience was expanded to include interviews with representatives from both the private and public sector to capture both the interests and concerns of the private transportation industry and the public sector's needs to implement freight recommendations and needs into their local planning efforts and partnerships with the private sector. The full summary of the interviews is included in **Appendix A**.

### 6.1.6 Coordination with Other Plans

Regional Plans were reviewed from the following organizations to build on and incorporate their relevant freight planning components into the Freight Plan document. Specific inputs from these plans are detailed in **Appendix B**.

- Cabarrus-Rowan MPO (CRMPO) [Cabarrus County and Rowan County]
- Charlotte Region Transportation Planning Organization (CRTPO) [Iredell, Mecklenburg, and a portion of Union County]
- Gaston-Cleveland-Lincoln MPO (GCLMPO) [Gaston, Cleveland, and Lincoln Counties]
- Rocky River RPO [Stanly, Anson, and portion of Union Counties]
- Catawba Regional Council of Governments [Chester, Lancaster, Union, and York Counties]
- Rock Hill-Fort Mill Area Transportation Study (RFATS) [York and Lancaster Counties, SC]

### 6.1.7 How Stakeholder Feedback was Utilized

The feedback gathered from committee meetings, the online survey, and telephone interviews was used to refine the Freight Plan. Stakeholder feedback included input on goals, objectives, and performance measures; identification and confirmation of freight needs, issues, and bottlenecks; and prioritizing recommendations. While the data available provided insight as to locations of accidents and commercial vehicle related incidents, travel times in the study area, land use activity, and locations of freight related traffic generators, the feedback from the plan participants provided both a sounding board for data validation as well as additional, non-quantifiable information. This included driver experiences, safety concerns, expressed interest and concerns from the real estate development community, where the private sector business models are changing in their respective markets, and truck parking or driver route preferences. Stakeholder feedback coupled with data analysis ensures the Freight Plan meets the needs of the project partners to improve freight mobility in the Greater Charlotte Region.

## 7 ANALYSIS AND FINDINGS

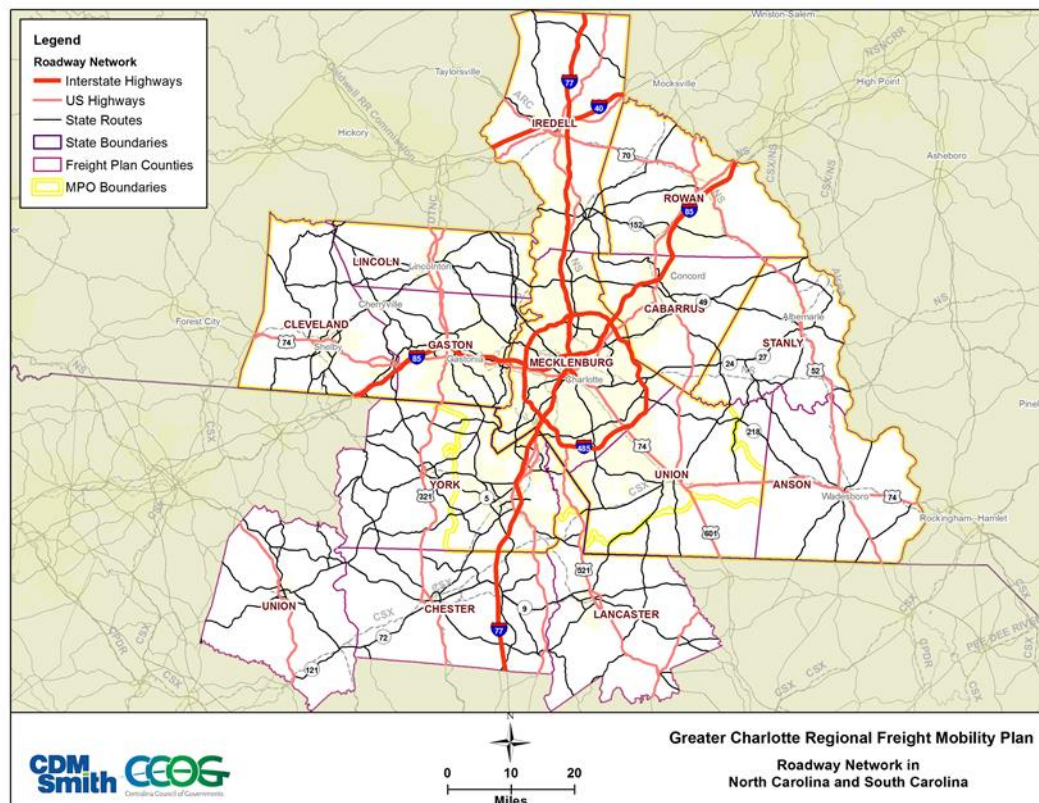
The existing conditions analysis was the starting point for understanding what actions and investments will help meet the Greater Charlotte Region’s freight-related economic competitiveness goals and objectives. The existing conditions analysis identified, inventoried, and assessed the current condition and performance of trucking, rail, and air cargo within the freight transportation system. The condition and performance is a product of economic conditions, system demand, quality and timing of operations and maintenance, and investments. The full existing conditions technical memorandum can be found in **Appendix B**. The “findings” presented in this section are a series of “Corridors” and “Concentration” identified to support and guide land use and economic development plan as well as an identified Strategic Freight Network for the Greater Charlotte Region.

### 7.1 EXISTING CONDITIONS

#### 7.1.1 Trucking

For the Charlotte Region, approximately 77 percent of total freight is moved by truck on the regional roadway network. This network consists of all classifications of roadways, from interstates to rural collectors. **Figure 7.1** illustrates the roadways most important to regional freight movements including regional interstates, US highways, state routes, secondary routes and local/city roads.

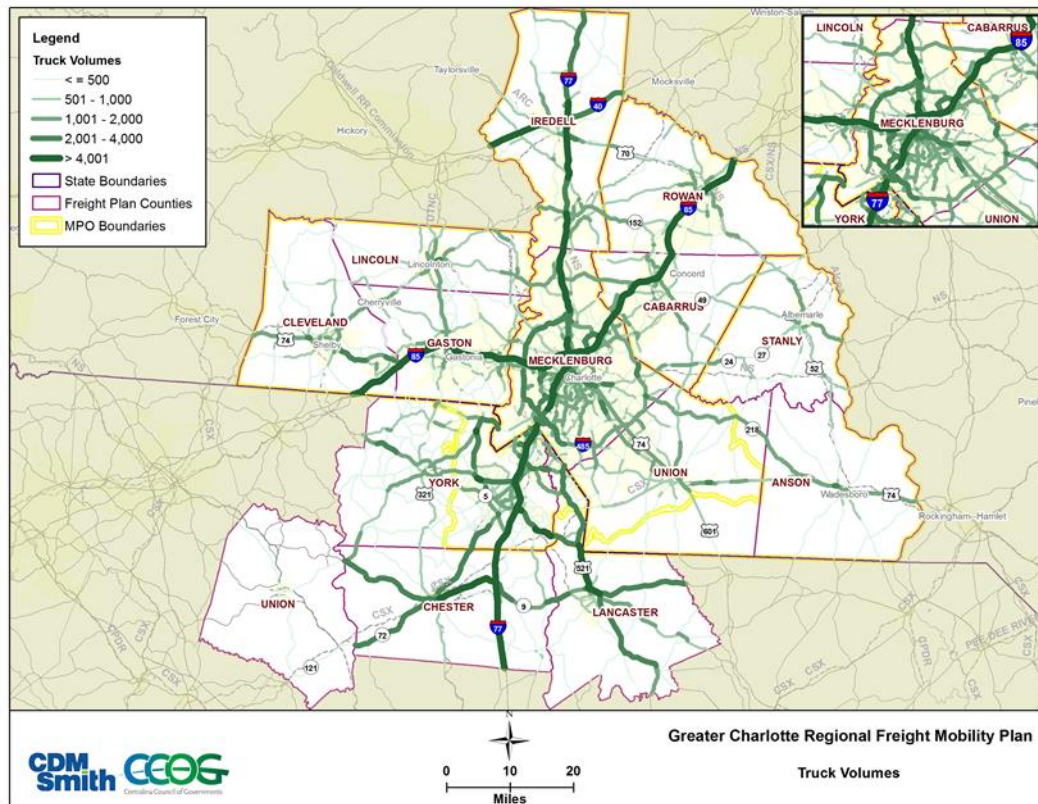
Figure 7.1: Greater Charlotte Region Roadway Network



Source: NCDOT and SCDOT

The interstates carry the bulk of the region's daily truck traffic as shown in **Figure 7.2**. I-85 and I-77 constitute the most critical freight corridors throughout the region. Other roadways that play a critical role in the movement of truck freight are I-485, US 74, US 321, NC 160 (near the Charlotte-Douglas airport), and SC 9 through Chester and Lancaster, SC.

*Figure 7.2: Regional Truck Average Daily Truck Volumes (2012)*



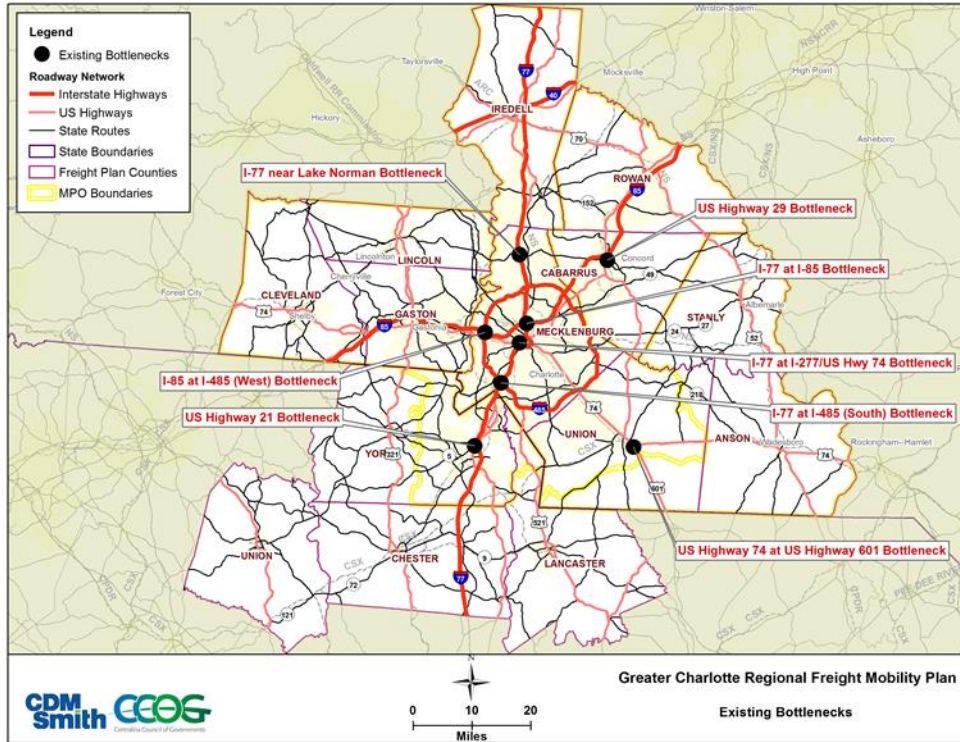
Source: NCDOT and SCDOT

Delay, safety, and access issues raise costs for shippers, carriers, manufacturers and consumers alike. **Figure 7.3** illustrates the truck related bottlenecks within the freight transportation system. **Figure 7.4** illustrates commercial vehicle crash hotspots from 2009 to 2013. Corridors with particularly high densities of crashes involving commercial vehicles include I-85 from Kannapolis to Charlotte and I-77 from Charlotte to Ft. Mill, SC. Other crash hotspots are in more densely populated areas such as Gastonia, Statesville, Mooresville, Salisbury and Monroe.

In addition, truck parking remains an issue throughout the region. At the 28 public and private truck parking locations, there are a total of approximately 1,100 truck parking spaces in the 14-county region. Ninety-six percent of all the truck parking spaces were observed being used with 23 of the parking locations observed being over capacity.

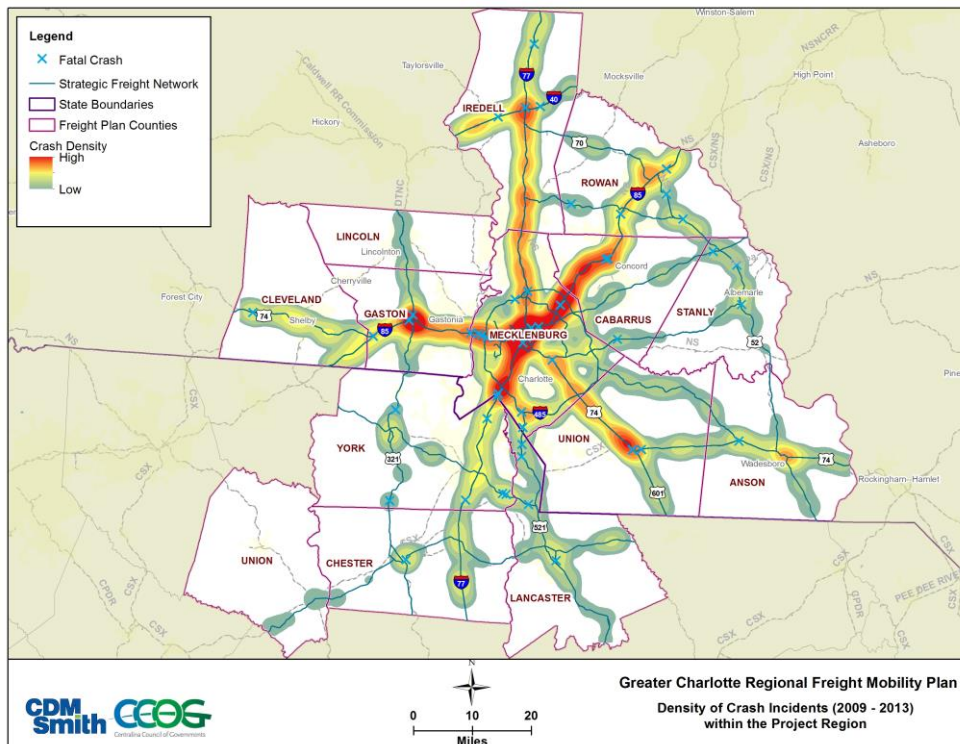


Figure 7.3: Charlotte Region Truck Bottlenecks



Source: American Transportation Research Institute (ATRI), October 2015

Figure 7.4: Commercial Vehicle Crash Hotspots (2009-2013)



Source: NCDOT and SCDCS

### 7.1.2 Intermodal Facilities

Intermodal facilities are critical to the movement of goods. These include facilities for multimodal distribution and warehousing, bulk transfer, and freight consolidation. **Figure 7.5** illustrates these locations, of which a majority are located in the City of Charlotte.

### 7.1.3 Rail

Within the Greater Charlotte Region, there is a combined 1,042 miles of track as listed in **Table 7.1** and shown on **Figure 7.6**. A majority of the track is owned and operated by two Class I railroads, Norfolk Southern (NS) and CSX Transportation (CSXT). The remainder of the rail line mileage is owned and operated by seven short line railroads.

*Table 7.1: Regional Railroad Ownership*

Railroad Owner	Miles
Aberdeen Carolina & Western Railway	50.8
Alexander Railroad Company	13.6
Carolina Coastal Railway	13.5
CSXT	335.0
NCDOT	1.0
Norfolk Southern	593.7
Piedmont & Northern Railway	15.5
Winston-Salem Southbound Railway	42.10
Lancaster & Chester	66.8
Others/Unknown	10.0

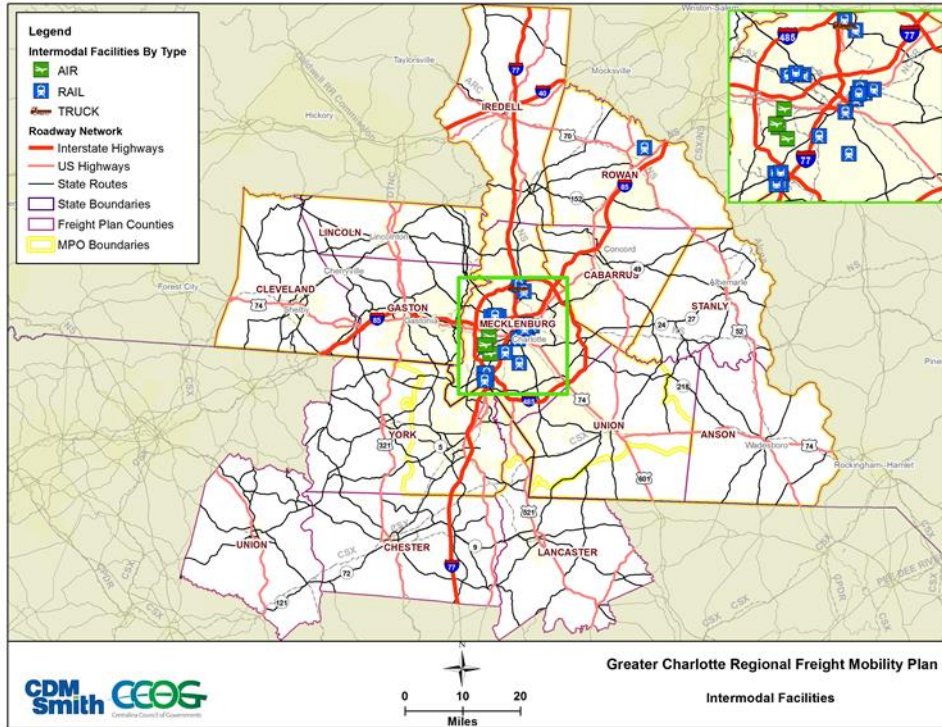
*Source: National Transportation Atlas Database, 2015*

Within the Greater Charlotte Region there are a number of key railroad corridors and facilities. Both NS and CSXT have key rail corridors and intermodal yards. For NS, the Main Line operating through Kannapolis, Charlotte and Gastonia serving the Charlotte-Douglas International Airport's Intermodal Yard is one of the busier corridors along the east coast. The CSXT SE Line connects to the Port of Wilmington and Hamlet Yard. **Figure 7.7** shows the regional Class I rail annual volumes. Grains, Coal and chemicals make up the bulk of the regional rail tonnage (**Figure 7.9**). Over 5 percent of all freight moves by rail in the region.

Freight rail bottlenecks have the potential to constrain the freight and passenger rail operations for not only Class I railroads, but Amtrak and short line railroads. **Figure 7.8** illustrates the rail bottlenecks located in the North Carolina portion of the region.

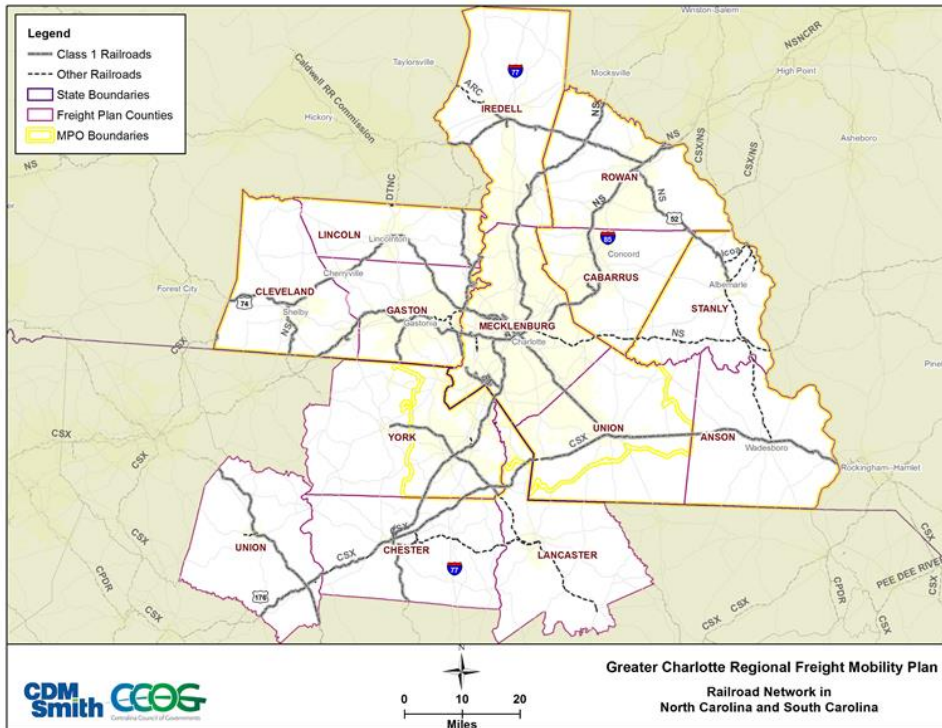


Figure 7.5: Greater Charlotte Regional Intermodal Facilities



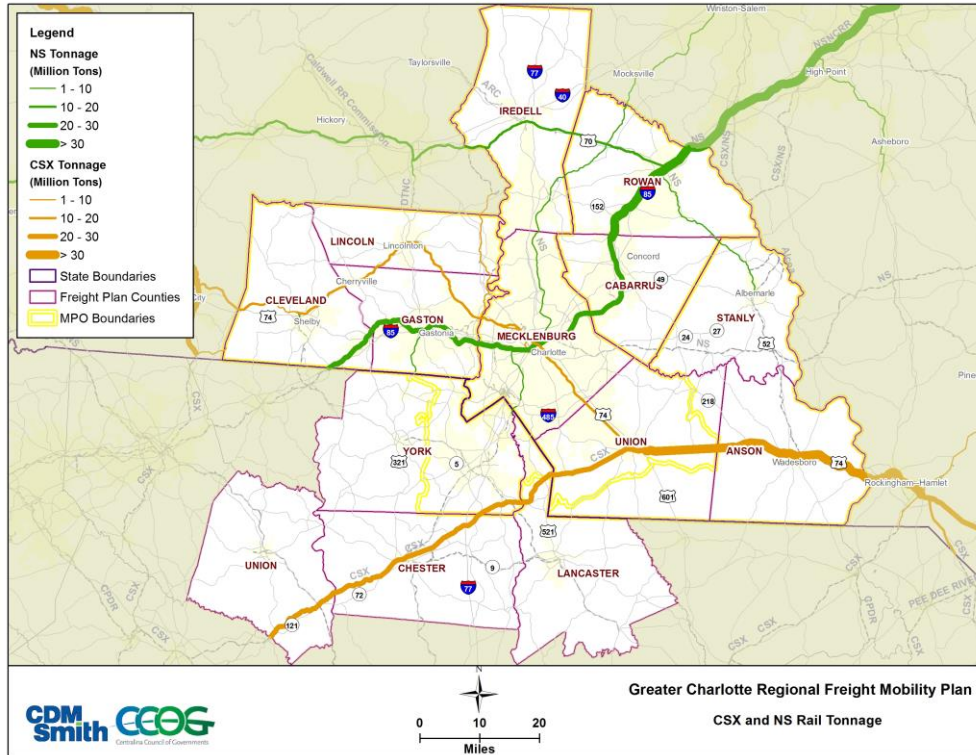
Source: National Transportation Atlas Database, 2015

Figure 7.6: Greater Charlotte Regional Rail Network



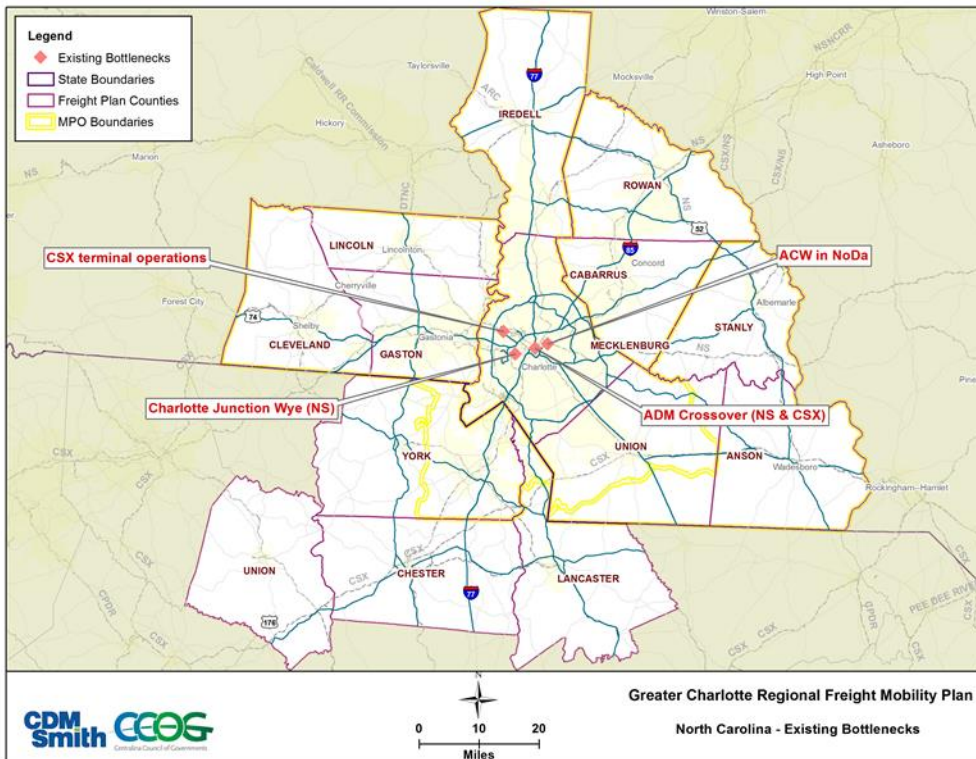
Source: National Transportation Atlas Database, 2015

Figure 7.7: Regional Class I Annual Rail Freight Volumes (2014)



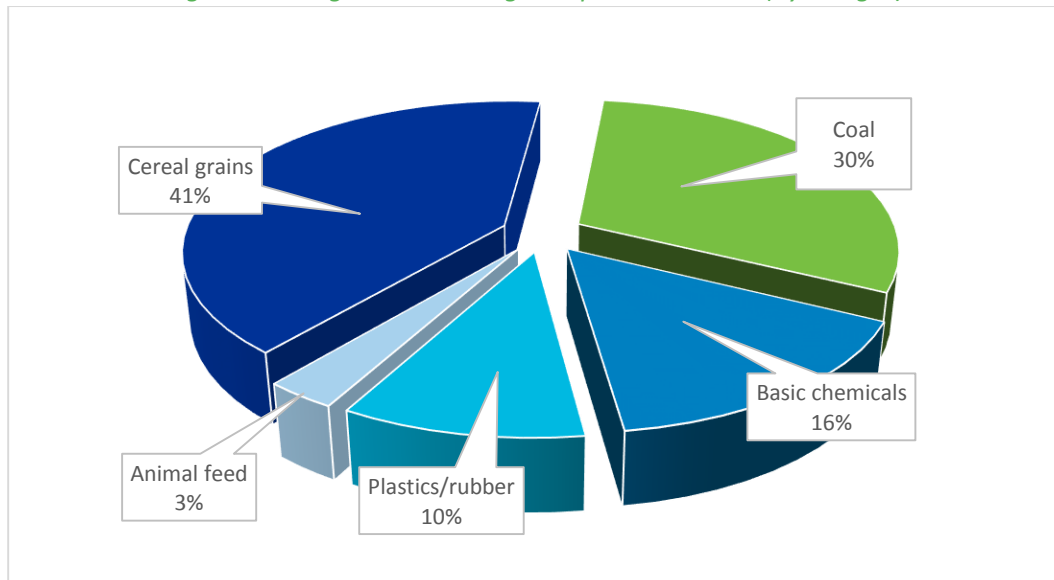
Source: NCDOT and WSP|Parsons Brinckerhoff

Figure 7.8: North Carolina Rail Bottlenecks



Source: NCDOT and WSP|Parsons Brinckerhoff

Figure 7.9: Regional Rail Freight Top Commodities (By Weight)



Source: FAF4

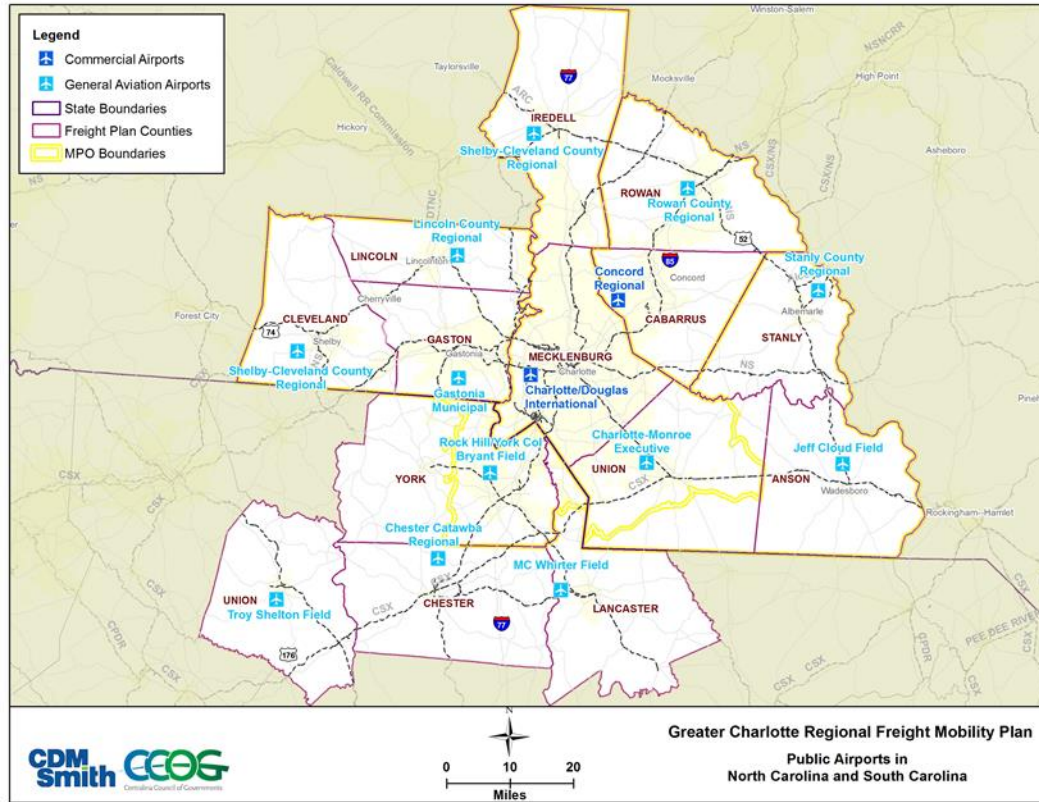
#### 7.1.4 Aviation

Within the planning area, there are two commercial service airports and twelve general aviation airports (**Figure 7.10**). The two commercial service airports are Charlotte-Douglas International Airport (CLT) and Concord Regional. CLT handles virtually all air cargo in the Greater Charlotte Region. According to the *North Carolina 2008 Statewide Logistics Plan*, as of 2006, the Charlotte-Douglas International Airport carried approximately 42 percent of North Carolina's 336 million pounds of air cargo carried each year. Since then the airport has developed a master plan that places emphasis on the further development of air cargo services as a priority.

Though small in volume, airborne freight has by far the highest value per ton of any mode. Typical commodities include goods from the pharmaceutical, automotive, and high-tech manufacturing sectors as well as the consumer parcel delivery services, as illustrated in **Figure 7.11**. Moving goods by air is expensive and the industry responds to the forces of supply and demand. This is not unique to the region but an industry wide trend.

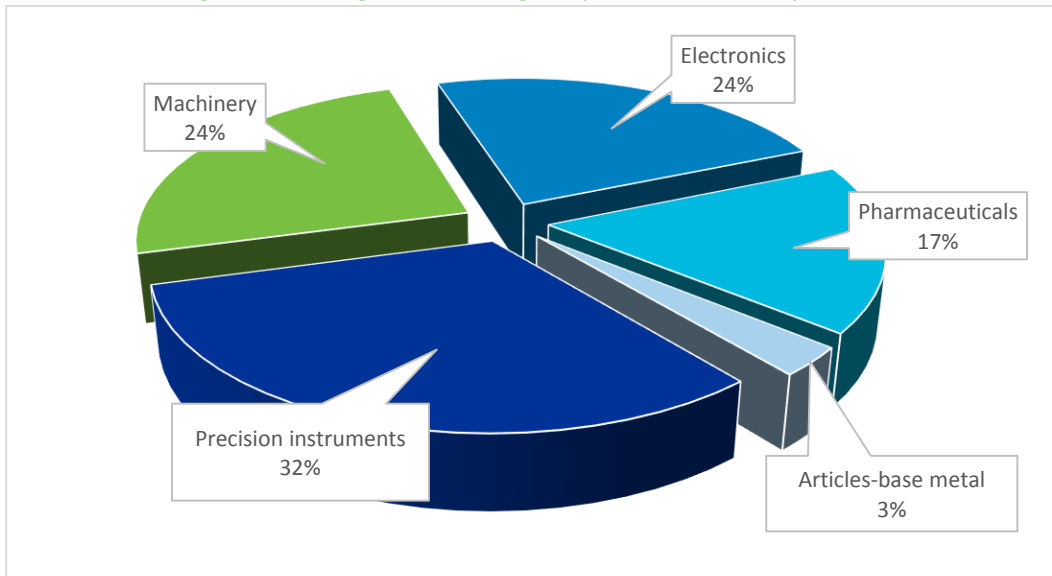


Figure 7.10: Greater Charlotte Regional Public Airports



Source: Federal Aviation Administration

Figure 7.11: Regional Air Cargo Top Commodities (By Value)



Source: FAF4

## 7.2 FREIGHT CHALLENGES BY MODE

To further develop the plan, the existing conditions analysis resulted in a series of challenges facing the safe, efficient and reliable freight mobility in the Greater Charlotte region. The following sections provide an overview of those challenges by mode: trucking, freight rail, and air.

### 7.2.1 Trucking

Because nearly every freight shipment travels by truck at some point in its delivery, challenges on the highway system can cause ripples through the state's freight transportation system and the economy. Delay, safety, and access issues raise costs for shippers, carriers, manufacturers and consumers alike.

#### **Truck Size & Weight Limits**

Increases in the size and weight of vehicles may improve freight efficiency, but they may also have a lasting impact on roadway quality and may compromise safety. In addition, heavier and larger trucks require route plans that may necessitate the need for lengthy detours due to weight limits, or vertical or horizontal clearances. The region's roadway system is relatively well equipped to handle the current truck traffic, particularly in urban areas. In rural areas, however, infrastructure that was built decades ago may struggle to handle the loads particularly as the timber industry continues to access sites that require access to these roadways and bridges.

#### **Incident Management**

Incident management describes the coordinated activities of transportation and emergency and law enforcement agencies to respond to crashes, highway construction and incidents such as hurricanes. Proper planning and investment in incident management can decrease the response times to emergencies and can help restore a corridor to pre-incident flow rates quickly. Statewide and regional transportation planning for disasters, emergencies, and significant events provide a framework for comprehensive, multi-jurisdictional, multi-disciplinary preparedness, response, and management for a wide range of incidents that affect freight transportation systems in the region. Providing solutions that address all hazards will support transportation system management, congestion management, and emergency response preparedness. Barriers to better incident management exist within the region such as manpower, funding limitations, lack of best practices knowledge, and bureaucracy/coordination issues. Feedback through the various participating stakeholders included high concern for the lack of regional coordination of incident management and high concern that traffic congestion was the result of slow incident management, opposed to limited capacity on roadways.

#### **Limited Availability of Truck Parking**

Hours of service regulations for truck drivers requires off-duty times for rest. The limited availability of parking has occasionally resulted in trucks parked on ramps and shoulders, which may present a safety risk. An inventory of parking supply conducted by a recent FHWA report<sup>3</sup> notes that North

<sup>3</sup> "Jason's Law Truck Parking Survey Results and Comparative Analysis," FHWA, August 2015

Carolina has the 23<sup>rd</sup> highest number of commercial truck parking spaces (5,845) provided by 53 public facilities and 206 private facilities. However, the location of truck parking facilities is critical especially in urban locations where the current supply may not be adequate in high demand locations. The existing conditions analysis revealed a near-capacity condition of the available truck parking in the study area, and feedback from the Freight Plan outreach effort identified the demand for truck parking as being a concern for the trucking industry.

### **Overall Condition & Design of Roadway Infrastructure**

As the economy grows and new industries are established, the highway system will be expected to carry more freight. Heavy-use truck routes often experience rough pavement, tight turning radii, narrow lane width, short ramps, inadequate merging lanes, lane restrictions and overall capacity issues. Improvements to address issues can range from small scale intersection improvements to the rebuilding and expanding of long stretches of highway links. The identification of truck bottlenecks and feedback from the stakeholder outreach identified the general condition of the highway system as a concern for current and future mobility of trucks. This is particularly of concern for trucking oversized and overweight trucks on rural highways where bridges have weight restrictions.

### **Improved Connectivity**

Intermodal connectivity allows the freight system to operate more efficiently by increasing the mode choices and speed at which goods move throughout the region. Issues exist with routes and infrastructure to rail yards, airports, and industry clusters. Improving these connections will increase the velocity of freight, reduce transportation costs and positively impact freight-reliant industries. In the study area, intermodal facilities are connected to the larger highway system in high congestion conditions. This is a concern for both mobility and resiliency of intermodal connections.

### **Additional Transportation Funding Mechanisms**

The region is not unique in terms of transportation funding shortfalls. Transportation needs far outweigh the resources available and historically, freight needs have not received separate attention from transportation in general. There is a freight specific need for additional transportation funding mechanisms, particularly for highway maintenance and construction. In addition, funding programs are often prescribed for specific types of projects or modes, limiting the ability to fund some high priority projects. Multimodal transportation funds, which can be used for transportation projects on a competitive basis regardless of mode, have begun to gain popularity in other states.

## **7.2.2 Freight Rail**

While the rail system is owned and operated by the private sector, the public sector has an interest in maintaining and improving its viability, because rail investments can save money on roadway preservation and capacity over the long run. Addressing the rail system's challenge to improving efficiency can help accommodate expected growth while meeting the safety and performance goals established in this Plan.



**Grade Crossing Safety**

At the more than 1,500 at grade highway/rail crossings in the region, 63 collisions occurred in the past 5 years. Improving the crossings' warning systems or eliminating at-grade crossing would address potential safety conflicts.

**Terminal Capacity Constraints**

Freight rail relies heavily on the intermodal connections with trucks. The transfer of bulk commodities such as grain, coal, oil, etc. requires adequate intermodal operations capacity to move goods from production to consumption markets. Intermodal terminal capacity constraints will reduce efficiency, ultimately increasing costs.

**Limited Rail Weight Limits**

The short line railroads' inability to accommodate 286,000-pound standard rail cars limits growth and creates chokepoints at rail switching locations with Class I railroads which can accommodate the standard sized rail car. Rail shipments that use these lines require extra planning so as not to exceed weight limits, resulting in more time for processing, and increased costs.

**Rail Funding**

Although there are some federal funding mechanisms for rail improvements and state funding for rail crossing improvements, there is no state fund set aside for rail capacity improvements. A state rail program to take advantage of federal programs that require a match would help address the 286,000-pound track limitations that the system faces. Also, states could assist short line railroads to sponsor rail improvement projects for federal funding. This is permitted in the Passenger Rail Investment and Improvement Act of 2008 (PRIIA).

**Intermodal Terminal Development and Multimodal Diversity**

Addressing the need for rail access improvements to businesses is a challenge but necessary to compete with other states. Improved intermodal terminal development could increase access to the national rail system and enhance the attractiveness of rail to area shippers and receivers.

**7.2.3 Air Cargo**

Though small in volume, airborne freight has by far the highest value per ton of any mode. Typical commodities include goods from the pharmaceutical, automotive, and high-tech manufacturing sectors as well as the consumer parcel delivery services. Moving goods by air is expensive and the industry responds to the forces of supply and demand. This is not unique to the region but an industry wide fact of life.

**Domestic Airline Space Availability**

The availability of domestic airline carriers belly space is declining due to the increased use of regional jets offering limited cargo capacity. The smaller jets are less costly to operate for short haul passenger movements, but they have little or no space for cargo. This reduced capacity, paired with improvements in truck logistics, has resulted in the U.S. Postal Service scaling back the amount of mail it moves by air.

### **Air Intermodal Connections**

In general, the constraints in land side access to airports occur outside the airport properties as trucks navigate the regional and local roadway systems. Access to transfer facilities and equipment at the region's freight-capable airports is good under current conditions, but it is noted that the maintenance and preservation of this intermodal connectivity is critical as planners look ahead to increase land use activity in the properties adjacent to the airport.

## **7.3 FREIGHT DEMAND – EXISTING AND FORECAST**

In order to get a more comprehensive picture of the need to accommodate freight mobility, an analysis was conducted to clearly understand the current and estimated growth in commodity flow moving into, out of, and within the study area.

To conduct this analysis, the recently released Freight Analysis Framework (FAF) version 4.1, produced by the U.S. DOT Federal Highway Administration (FHWA) in partnership with the U.S. DOT Bureau of Transportation Statistics (BTS) was used by the Freight Plan team. FAF 4.1 includes estimated data for 2012 through 2015 plus forecasts for 30 years at 5-year intervals.

As defined in FAF, the Charlotte region includes the ten North Carolina counties in the Charlotte Combined Statistical Area (CSA): Iredell, Rowan, Lincoln, Cleveland, Gaston, Mecklenburg, Cabarrus, Stanly, Union, and Anson. It does not include the South Carolina counties of Chester, Lancaster, Union, and York Counties that form the remainder of the Greater Charlotte Region.

Freight forecast analysis for the South Carolina counties of Chester, Lancaster, Union, and York was conducted using the IHS Global Insights TRANSEARCH commodity flow database, provided in partnership with SCDOT. The freight forecast analysis captures and reports commodity flow estimates for years 2011, 2015, and 2040. A detailed analysis of freight movements by commodity type and mode are provided in **Appendix D – Freight Forecasts**.

The freight forecast analysis for both the North Carolina counties and South Carolina counties that encompass the Greater Charlotte Region include the following highlights:

#### **North Carolina Counties Forecast Summary**

- Total freight tonnage from, to and within the Charlotte region is projected to increase 35 percent from 2015 to 2045, or at a compound annual growth rate of 1.1 percent per year. In 2015 about 95 percent of total freight tons were domestic and these volumes are projected to grow by 30 percent.
- While they represent a small share of total volumes, in 2015 foreign freight flows are expected to grow faster than domestic freight with imports more than doubling and exports tripling from 2015 to 2045.
- Total freight value growth of 79 percent is expected to be more than double growth in tons, reflecting higher volume growth for high-value products compared to that of low-valued products.

- Freight flows moving within the Charlotte region are predominantly transported by truck; are much less than inbound or outbound flows in terms of tonnage or value; and are expected to grow more slowly, at 17 percent for tons and 48 percent for value over the forecast period.
- Inbound freight tonnage in 2015 through 2045 is larger than outbound freight due to natural gas transported into the region by pipeline. However, trucking is the largest mode of transportation for both inbound and outbound flows for both tons and value, and for this large segment of freight, outbound volumes exceed inbound from 2015 through 2045.
- Freight transported by air represents a small portion of tons moved inbound or outbound from the Charlotte region, but it is expected to be the largest mode in terms of growth in value, 176 percent growth in inbound value from 2015 to 2045 and 350 percent growth in outbound value over that period. Top product groups transported by air include electronics, machinery, pharmaceuticals, precision instruments and chemical products.
- The strongest directional growth is outbound shipping by value, which doubles over the forecast period. Driven by increases in such commodities as machinery, electronics, and pharmaceuticals, this is a very positive indicator for the regional economy.
- Origins of inbound freight and destinations of outbound freight are concentrated in North Carolina, South Carolina, Virginia and Georgia. The concentrations in these four states are especially high for tonnage since heavier and lower-valued commodities tend to be transported shorter distances.

### South Carolina Counties Forecast Summary

- Growth in total freight tonnage from, to and within the South Carolina counties in the study region is expected to be similar to that of the Charlotte region, to increasing at a compound annual growth rate of 1.3 percent per year. In 2015 about 96 percent of total freight tons were domestic and these volumes are projected to grow by 1.2 percent over the forecast period<sup>4</sup>.
- International volumes in the South Carolina counties are projected to grow much faster than the 1.2 percent growth rate for domestic volumes, at 2.9 percent for import tonnage and 3.0 percent for value. Export volumes are expected to grow even faster, at three times the domestic growth rates, 3.5 percent for tons and 3.7 percent for value.
- Growth in value in the South Carolina Counties is expected to be about the same as growth in tons, while value for imports and exports is projected to grow slightly more than increases in tons.

<sup>4</sup> Because of different data sources, the historic and forecast years for the South Carolina counties) within the study region (2011, 2040) are different than those for the Charlotte region (2015, 2040)

- In the South Carolina counties, almost all freight is moved by truck with just 2 percent transported by rail.
- Origin and destination states for the South Carolina counties are also concentrated in the nearby states of North Carolina, South Carolina, Georgia, and Virginia.

## 7.4 LAND USE ANALYSIS

Industrial land use patterns are critical to freight movement and its impact to the transportation system. Successful planning and zoning efforts should provide a balance between competing land uses while accommodating freight transportation needs. Balancing such efforts could help reduce or prevent additional sprawl around the region by developing sustainable freight and industrial related facilities within existing corridors and concentrations. This data compilation and analysis is provided to guide future land use planning efforts by highlighting opportunities to merge the goals of land use planning and economic development with the planning for necessary transportation connections to support mobility for the land use activities.

This Land Use and Economic Development analysis is presented in its entirety in **Appendix E – Economic Context and Land Use Analysis**, providing an inventory of land use patterns, accessibility to transportation infrastructure and propose planning and economic development applications that support efficient and safe freight mobility in the Charlotte Region.

The interstate highway system is a dominant influence on the location of economic activity in the Charlotte region and it would appear that this system, as it is upgraded with more lanes and improved on and off ramps, will be the major locational attractor of new economic activity. While a significant amount of economic activity is found along the arterial system it is anticipated that much of this is legacy activity and not new activity that is seeking an off-interstate location.

This land use and economic development analysis examines and identified linear corridors and nodal concentrated areas of freight development as illustrated in **Figure 7.12**, and listed in **Table 7.2** and **Table 7.3**. Industrial sites in the study area were identified, and these clusters of industrial sites were grouped and placed into a freight corridors or concentrations. Examining the existing opportunities within these identified areas with the selected corridors and concentrated areas provides for infill and/or new development to locate near existing developments. This approach increases efficiency in freight movements, minimizing land use conflicts and creates economies of scale for future freight improvement projects.

It should be noted that the Corridors and Concentrations are not entirely within the study area. Like most economic development and transportation patterns, these Corridors and Concentrations are not limited to geopolitical boundaries. Concentration 10 and portions of Corridors C, L and M are outside of the defined study area boundary of the Freight Plan. Those areas of interest remain identified for future planning purposes and consideration, but land use data were not available for these areas, as noted in related tables below





Table 7.2: Freight Corridors

Corridors
A. Billy Graham, Woodlawn, Tyvola/NS from CDIA to South Park
B. I-85/NS from Charlotte to Gastonia/Kings Mountain
C. NC 16/CSX from Through Gaston County (partially outside of study area)
D. I-77/NS from Charlotte to Statesville (NS to NC 150)
E. I-85 from Charlotte to NC 73
F. US 29, I-85/NS from Charlotte to Salisbury/Spencer
G. NC 27/NC 205/NC 138/ACWR from Charlotte to Norwood/Lake Tillery
H. US 74/CSX from Charlotte to Monroe
I. US 521 from Pineville to CSX line
J. I-77/NS from Charlotte to Edgemoor/CSX line
K. US 321 South from Gastonia to Clover
L. US 321/Bus US 321/NS from Gastonia to Conover (partially outside of study area)
M. I-40/US 70/NS from Statesville to Hickory (partially outside of study area)
N. US 70/NS from Statesville to Salisbury
O. US 52/NS from Salisbury to Albemarle
P. NC 73 from NC 49 to Albemarle
Q. NC 218 from I-485 to Unionville
R. US 74/CSX from Marshville to Lilesville
S. SC 9/ CSX/LC/NS from Wilksburg to Lancaster
T. NC 279/CSX from Dallas to Cherryville
U. NC 27/CSX from Mount Holly to Lincolnton
V. NC 152 from Mooresville to China Grove

Table 7.3: Freight Concentrations

Concentrations
1. In and near the center of Charlotte
2. I-85/US 321/US 74/NS Gastonia area
3. I-77/I-40/US 70/NS/ARC Statesville area
4. I-85/US 52/US 70/US 29 in the Salisbury area
5. The Arrowood/Westinghouse/I-77 intersection
6. I-85/NC 273/NC 27/CSX/NS Mount Holly/Belmont/McAdenville
7. I-77/US 21/NS Mooresville area
8. NC 27/NC 200/ACWR Locust area
9. US 321/CSX Lincolnton area
10. I-40/US 70/US 321/NS Hickory Area (outside of the study area)
11. US 52/NC 27/NC 73/CSX(WSS)/NS Albemarle area
12. US 321/SC 49/NS York area
13. US 74 /CSX/NS Shelby area



This presentation of data within **Appendix E** should provide planners with opportunities to reduce conflicts and consolidate freight travel demands across modes of transportation. The data guides education for planners not familiar with the impacts of freight related land uses as well as assists in the prioritization of transportation planning to support safe interactions between roadway and railroad users when conflicts cannot be avoided.

The further dispersion of freight-using and freight-generating plants or facilities away from the existing pattern of corridors and concentrations creates six main transportation impacts:

1. Conflicts with rural passenger traffic;
2. Increases in the maintenance costs of rural roads due to increased weight loads and frequency of use;
3. Greater emissions generation in more rural and agricultural environments;
4. A reduction of economies of scale for freight input projects;
5. Conflicts with non-industrial and residential land uses; and,
6. Increased travel times and distance to markets increasing costs to businesses and final consumers.

#### 7.4.1 Charlotte Regional Strategic Freight Network

A key element of the Freight Plan is the establishment of a regional Strategic Freight Network (SFN) for the study area. By definition, a SFN is a system of infrastructure critical to the successful movement of freight through a study area. For this Freight Plan, this SFN serves as the network around which the region currently moves freight and plans to continue to support safe, efficient movement of freight into the forecast plan years. The Freight Plan final recommendations are focused on this SFN in terms of maintenance, operations and capacity improvements.

Illustrated in **Figure 7.13 and Figure 7.14**, the Charlotte SFN encompasses all modes of freight moving transportation. Through several iterations with the Coordinating Committee, the following criteria were used to finalize the roadway and other modal components of the Charlotte SFN:

- **Highways**
  - Those on the National Multimodal Freight System (NMFS) and/or all Interstates
  - Those designated as truck routes by NCDOT
  - Those included in the South Carolina Statewide Freight Plan
  - Approved Intermodal Connectors on the National Highway System
  - Those identified by planning agencies as critical to local freight movement
- **Railroads**
  - All active freight railroads
  - All active intermodal rail terminals
- **Aviation**
  - All commercial service airports

Figure 7.13: Strategic Freight Network

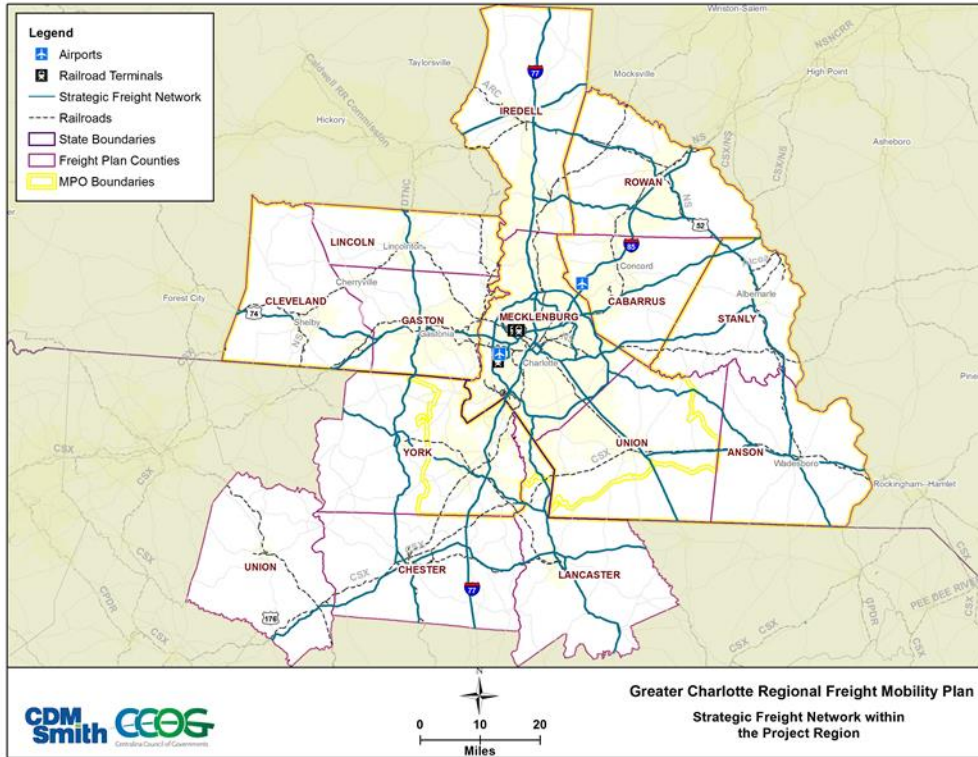
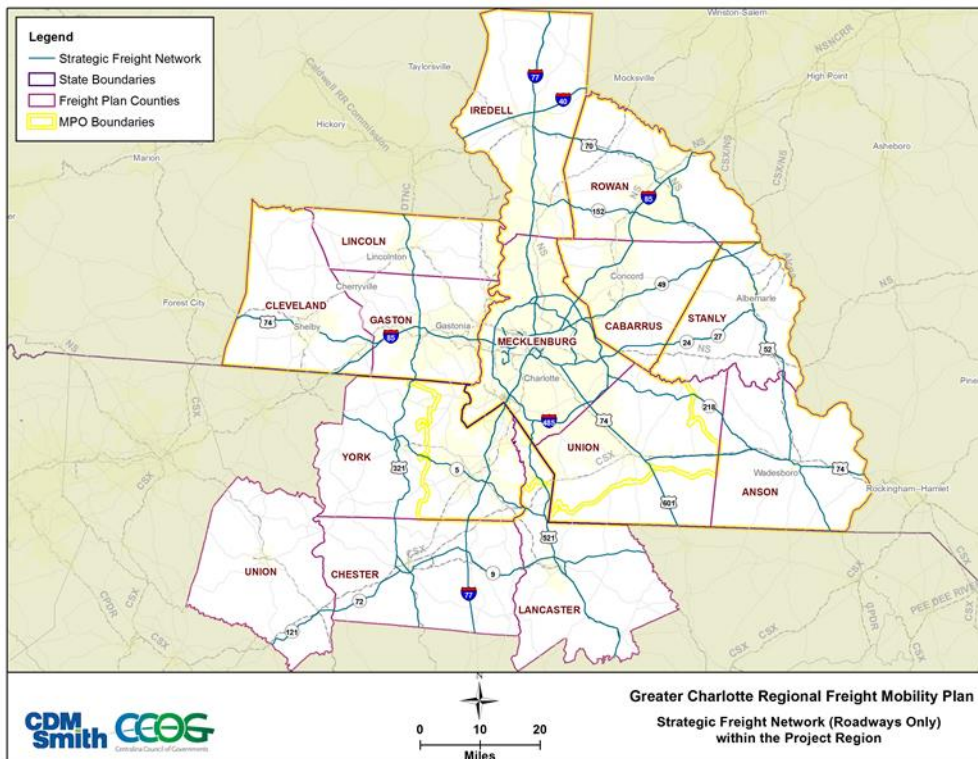


Figure 7.14: Strategic Freight Network (Roadways Only)



### 7.4.2 Critical Rural and Urban Freight Corridors

According to the latest available guidance from USDOT, Fast Act Section 1116 (Critical Urban Freight Corridor and Critical Rural Freight Corridor Guidance) and based on coordination with both NCDOT and SCDOT, this Freight Plan presents the following data on suggested facilities for inclusion in the state level CUFC/CRFC designations. The method of this provision was to present the Charlotte SFN (roadways only) broken out by urban and rural land use designation, based on 2010 Census Urban and Rural classification data.

Provided for consideration in the state designated multimodal critical rural and urban freight corridors to be determined are the following statistics and roadway facilities, illustrated in **Figure 7.15**, and detailed in **Table 7.4**. Understanding the mileage limitations for each state, this network is subject to additional analysis by NCDOT and SCDOT before facilities will be included in the state designated CUFC/CRFC.

*Figure 7.15: Strategic Freight Network with Urban and Rural Area Designations*

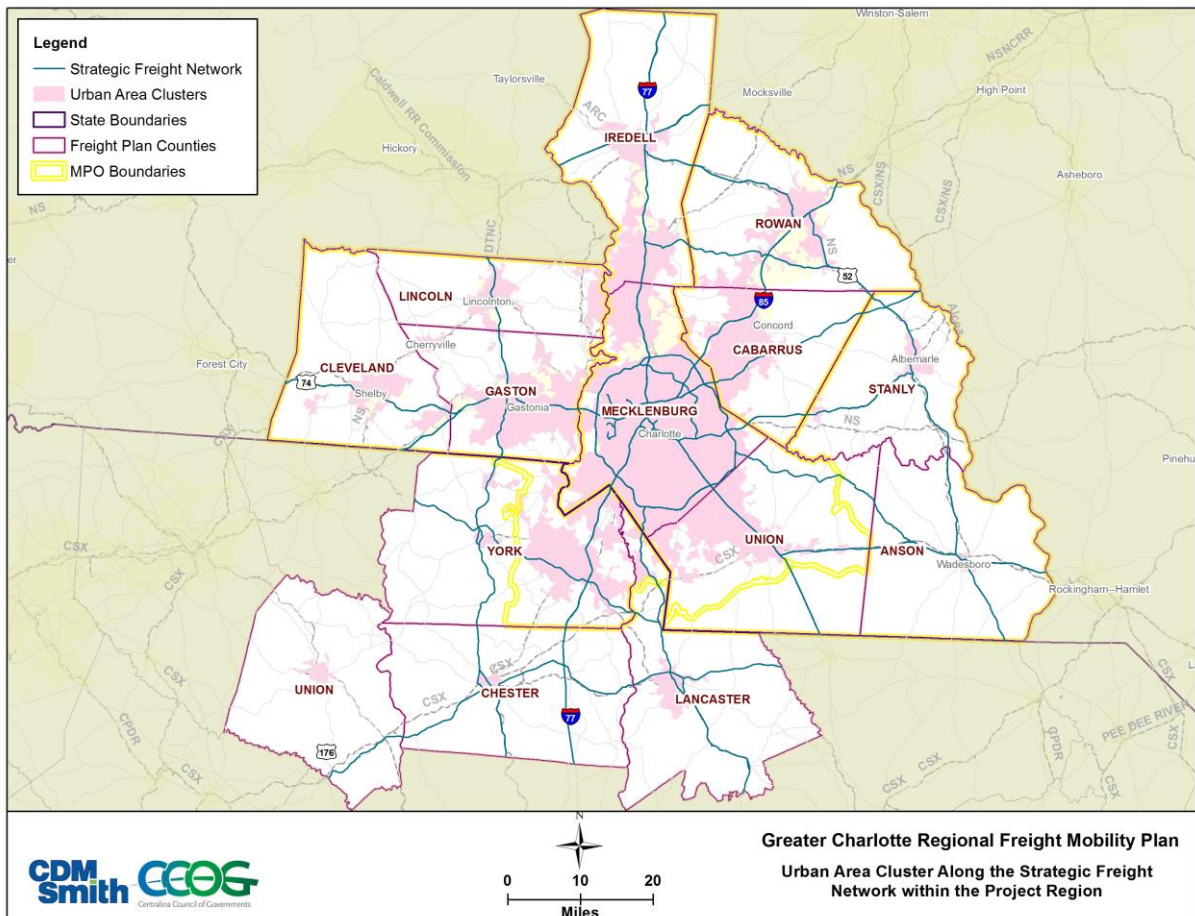


Table 7.4: Urban/Rural Corridor Mileage

Rural	Route	Length (Miles)	Urban	Route	Length (Miles)	
North Carolina	I-40	25.57	North Carolina	I-277	8.89	
	I-485	6.61		I-40	20.14	
	I-77	52.19		I-485	117.96	
	I-85	58.00		I-77	85.72	
	NC-152	14.08		I-85	106.52	
	NC-218	28.69		NC-152	12.09	
	NC-24,27	40.24		NC-16	1.70	
	NC-49	24.06		NC-218	1.88	
	NC-8,49	2.08		NC-24	31.68	
	NC-521	0.58		NC-24,27	19.43	
	US-321	5.91		NC-49	27.20	
	US-321-BUS	0.02		NHS Intermodal Connector	1.03	
	US-52	55.19		RMP-6349	0.01	
	US-601	21.92		NC-1177	1.11	
	US-70	23.61		NC-1490	1.44	
US-70	0.26	NC-150		1.87		
US-74	74.77	NC-160		1.06		
South Carolina	I-77	32.88		NC-1769	0.66	
	SC-121	26.60		NC-27	3.47	
	SC-5	18.90		NC-2772	1.76	
	SC-9	34.01		US-29	0.36	
	US-321	39.57		US-321	59.63	
	US-321 BUS	0.78		US-52	38.16	
	US-521	37.71		US-52,74	5.22	
	US-521 BUS	1.57		US-521	9.70	
	US-521 Connector	0.06		US-601	2.29	
North Carolina				US-70	11.61	
				US-70,601	3.12	
				US-74	87.45	
				US-74,601	5.14	
	South Carolina				I-77	28.84
					SC-121	0.11
				SC-5	22.79	
				SC-9	7.12	
				SC-9,US-521	2.04	
				US-231	17.39	
				US-231 BUS	5.49	
				US-321	0.63	
				US-521	31.77	
				US-521 BUS	3.84	



## 8 FREIGHT VISION, GOALS & OBJECTIVES, & PERFORMANCE MEASURES

Coordinated strategic goals, objectives, and performance measures provide the framework for implementing the Freight Plan in a consistent way in coordination with state, regional, and local planning efforts. These goals and objectives are a cornerstone upon which all plan performance measures and final recommendations were based.

### 8.1 REGIONAL FREIGHT VISION STATEMENT

*“With its unique logistical and global competitive advantage for domestic and international commerce, the Charlotte region enhances economic competitiveness by collaboratively developing and investing in an integrated, multimodal freight transportation system that provides safe, reliable, efficient and sustainable freight mobility and by coordinating transportation and land use decisions across the region. This goods movement system supports the region’s economy, creates jobs, and provides the mechanisms to maintain and improve quality of life for the region’s residents.”*

### 8.2 REGIONAL FREIGHT GOALS & OBJECTIVES

The Greater Charlotte Regional Freight Mobility Plan goals were established after reviewing the National Multimodal Freight Policy goals, NCDOT Long Range Transportation Plan goals, SCDOT Statewide Multimodal Plan goals, regional MPO plan goals, and county transportation plans. A set of objectives were developed to articulate the Freight Plan goals, help define freight transportation system needs, and identify the desired future performance of the freight network. This series of goals and supporting objectives were fully vetted throughout the early months of the Freight Plan development in partnership with the Coordinating Committee. Additional detail on these can be found in **Appendix C**.

#### 8.2.1 Goal 1: Economic Competitiveness and Efficiency

Support economic competitiveness by making investment decisions for freight transportation modes that make the most efficient use of resources, and pursue sustainable funding possibilities.

##### **OBJECTIVES**

- Develop, integrate, and support a freight transportation system supporting the region’s position as a major freight hub via a network of highways, railroads and airports
- Encourage regional efforts to maximize the region’s competitiveness in freight and logistics
- Formulate a relationship between the private and public sectors to leverage available public and private revenue resources

#### 8.2.2 Goal 2: Safety and Security

Improve the safety and security of the freight transportation system.



**OBJECTIVES**

- Assist regional emergency management agencies to be better prepared in the event of crashes on the freight system, and in response to hazardous material incidents
- Expand the use of technology to increase regional freight safety and security
- Reduce the number of high crash locations that involve trucks or at rail grade crossings

**8.2.3 Goal 3: Infrastructure Preservation and Maintenance**

Improve the state of good repair of the freight transportation system.

**OBJECTIVE**

- Maintain regionally significant streets, highways, and bridges to a state of good repair to minimize truck travel times and cargo damage

**8.2.4 Goal 4: Environmental Stewardship**

Reduce adverse environmental and community impacts of the freight transportation system.

**OBJECTIVES**

- Encourage land use planning that supports and promotes the efficient movement of freight
- Reduce the emissions resulting from freight congestion and excessive vehicle/train idling

**8.2.5 Goal 5: Congestion and Reliability**

Reduce travel times and increase the reliability of the freight transportation system.

**OBJECTIVES**

- Reduce the frequency of recurring and non-recurring congestion on the freight system

**8.2.6 Goal 6: Performance and Accountability**

Develop methods to track and improve performance and accountability of the operations and maintenance of the freight transportation system.

**OBJECTIVES**

- Decrease the costs of freight movement by reducing empty backhaul movements
- Improve freight system operations and information sharing to benefit regional planning and decision making through improvements in technology
- Increase freight knowledge and expertise by planners and elected officials throughout the region
- Implement a performance-based tracking process to determine how well the freight system is functioning relative to freight investments

**8.2.7 Goal 7: Regional Coordination**

Establish and enhance the coordination of regional public and private sector organizations to improve freight planning and policy and project implementation

**OBJECTIVES**

- Improve coordination among regional agencies responsible for freight transportation planning and implementation.
- Engage private sector freight stakeholders to inform freight transportation planning and decision making.

### 8.3 REGIONAL FREIGHT GOALS ALIGNMENT WITH NATIONAL AND STATE PROGRAMS

The goals of this Freight Plan are in alignment with the National Multimodal Freight Policy goals as well as those of the South Carolina Freight Plan and the North Carolina state transportation goals. **Table 8.1** compares the Freight Plan goals to the National Multimodal Freight Policy goals. **Figure 8.1** compares the Freight Plan goals to South Carolina and North Carolina goals.

*Table 8.1: Greater Charlotte Regional Freight Plan Goals Alignment with National Programs*

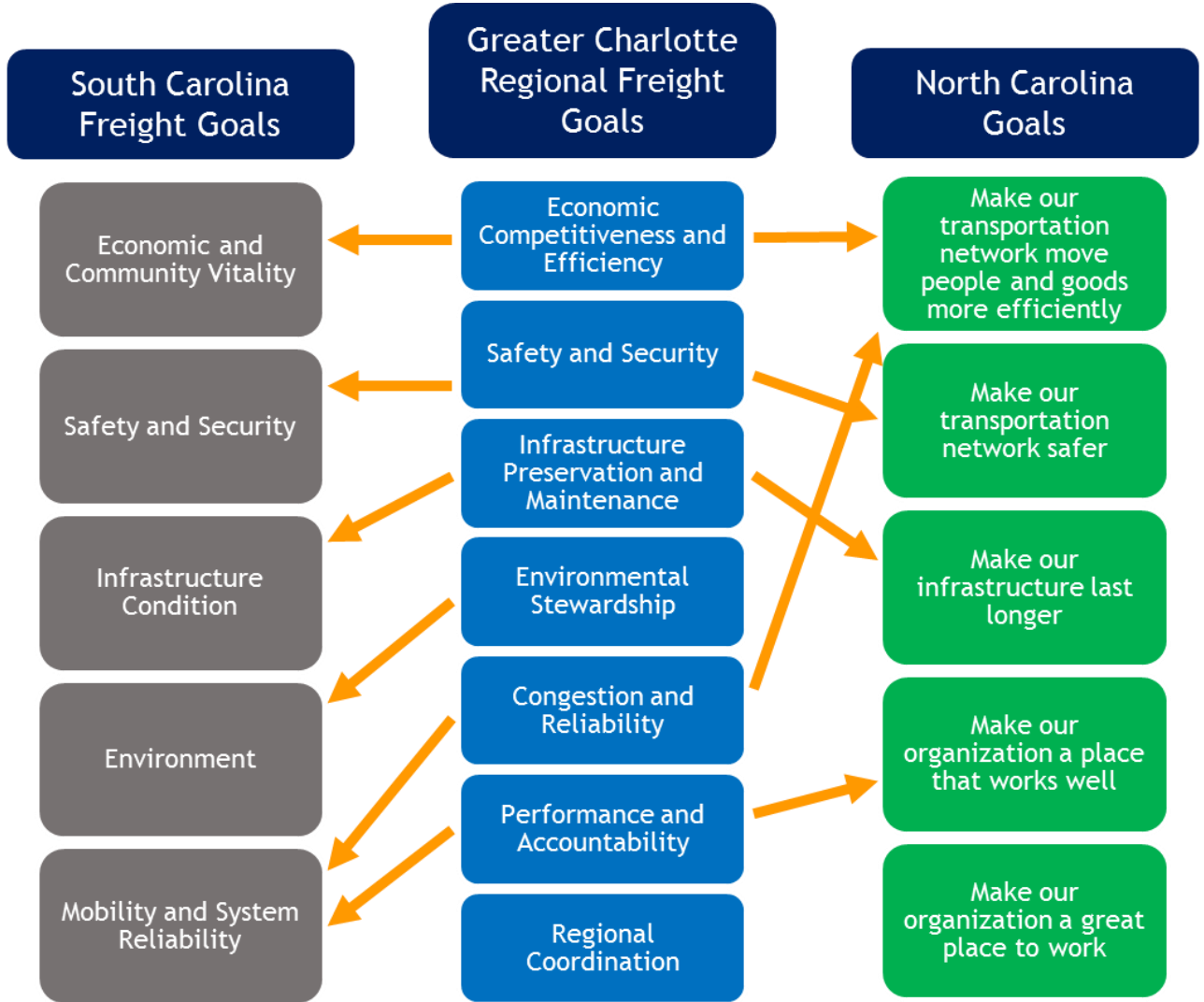
Greater Charlotte Regional Freight Plan Goals	National Multimodal Freight Policy Goals	National Freight Highway Program Goals
Economic Competitiveness and Efficiency	●	●
Safety and Security	●	●
Infrastructure Preservation and Maintenance	●	●
Environmental Stewardship	●	●
Congestion and Reliability	●	●
Performance and Accountability	●	●
Regional Coordination		●

The goals of the National Multimodal Freight Policy are:

- To invest in infrastructure improvements and to implement operational improvements that:
  - Strengthen the contribution of the national freight network to the economic competitiveness of the United States;
  - Reduce congestion; and
  - Increase productivity, particularly for domestic industries and businesses that create high-value jobs;
- To improve the safety, security, and resilience of freight transportation;
- To improve the state of good repair of the national freight network;
- To use advanced technology to improve the safety and efficiency of the national freight network;
- To incorporate concepts of performance, innovation, competition, and accountability into the operation and maintenance of the national freight network;
- To improve the economic efficiency of the national freight network; and

- To reduce the environmental impacts of freight movement on the national freight network.<sup>5</sup>

Figure 8.1: Greater Charlotte Regional Freight Plan Goals Alignment with South Carolina and North Carolina Goals



The FAST Act<sup>6</sup> establishes a new National Highway Freight Program to improve the efficient movement of freight on the National Highway Freight Network (NHFN) and support several goals, including:

- Investing in infrastructure and operational improvements that strengthen economic competitiveness, reduce congestion, reduce the cost of freight transportation, improve reliability, and increase productivity;
- Improving the safety, security, efficiency, and resiliency of freight transportation in rural and urban areas;

<sup>5</sup> Source: 23 U.S. Code § 167 - National freight policy

<sup>6</sup> FAST Act § 1116; 23 U.S.C. 167

- Improving the state of good repair of the NHFN;
- Using innovation and advanced technology to improve NHFN safety, efficiency, and reliability;
- Improving the efficiency and productivity of the NHFN;
- Improving State flexibility to support multi-State corridor planning and address highway freight connectivity; and
- Reducing the environmental impacts of freight movement on the NHFN.

## 8.4 PERFORMANCE MEASURES

In the public sector, performance measures provide a means to assess how the transportation system and/or a transportation agency is functioning and operating. Performance measures help inform decision-making and create better accountability for efficient and effective program implementation. Performance measurements serve the following three functions:

1. **Plan Development** – Provide a means to quantify baseline system performance and impacts of plan options to support trade-off decisions and help communicate the anticipated impacts of different investment strategies.
2. **Plan Implementation** – Support plan implementation by emphasizing agency goals/objectives and integrating them into budgeting, program structure, project selection, and project/program implementation policies.
3. **Accountability** – Facilitate tracking and reporting on system performance relative to plan goals and objectives to support accountability for plan implementation and results.

Under the MAP-21 Act and the FAST Act, State DOTs and MPOs are required to set performance targets consistent with the established national performance measures for freight, integrate those targets within their planning processes, and report to the USDOT on their progress.

Beyond federal requirements, freight performance measures will provide the project partners and MPOs and RPOs with the ability to monitor how well the transportation system is accommodating safe and effective freight movements. These measures will allow for the identification of trends or challenges before they become problems and the project partners can be better prepared and responsive to private sector needs.

The freight performance measures were developed within the context of the Freight Plan goals and objectives, as well as the South Carolina Statewide Freight Plan, and the region's long range transportation plans. The Freight Plan's performance measures are consistent with the South Carolina Statewide Freight Plan and ensure uniformity with the goals for the state, as detailed in **Table 8.2**. The North Carolina Freight Plan is currently in development, and coordination between the two is ongoing.

Table 8.2: Freight Mobility Plan Goals, Objectives, and Performance Measures

Freight Mobility Plan Goals	Freight Mobility Plan Objectives	Performance Measures (source of data)
1. Economic Competitiveness and Efficiency	<ul style="list-style-type: none"> <li>• Develop, integrate, and support a freight transportation system that supports the region’s position as a major freight hub via a network of highways, railroads and airports</li> <li>• Encourage regional efforts to maximize the region’s competitiveness in freight and logistics</li> <li>• Formulate a relationship between the private and public sectors to leverage available public and private revenue resources</li> </ul>	<ul style="list-style-type: none"> <li>• Reduce congestion on intermodal connectors and roads leading to major energy/manufacturing centers (INRIX travel time data or AADT-based level of service)</li> </ul>
2. Safety and Security	<ul style="list-style-type: none"> <li>• Assist regional emergency management agencies to be better prepared in the event of crashes on the freight system, and in response to hazardous material incidents</li> <li>• Expand the use of technology to increase regional freight safety and security</li> <li>• Reduce the number of high crash locations that involve trucks or at-grade rail crossings</li> </ul>	<ul style="list-style-type: none"> <li>• Hours of delay from incidents (NCDOT, SCDOT)</li> <li>• Number of crashes and fatal crashes involving trucks (and rate) (NCDOT, SCDOT, SCDPS)</li> <li>• Grade Crossing Crash/Incident Rate (NCDOT, SCDOT, SCDPS)</li> </ul>
3. Infrastructure Preservation and Maintenance	<ul style="list-style-type: none"> <li>• Maintain regionally significant streets, highways and bridges to a state of good repair to minimize truck travel times and cargo damage</li> </ul>	<ul style="list-style-type: none"> <li>• Percent of structurally deficient bridges on freight network (NCDOT, SCDOT, NBIS)</li> <li>• Percent of freight network meeting pavement condition targets (NCDOT, SCDOT)</li> <li>• Number of weight-restricted bridges on the freight network (NCDOT, SCDOT, NBIS)</li> <li>• Number of vertical restrictions on the freight network (NCDOT, SCDOT, NBIS)</li> </ul>
4. Environmental Stewardship	<ul style="list-style-type: none"> <li>• Encourage land use planning that supports and promotes the efficient movement of freight</li> <li>• Reduce the emissions resulting from freight congestion and excessive vehicle/train idling</li> </ul>	<ul style="list-style-type: none"> <li>• MPO and RPO Air Quality Design Values (MPO/RPO Data)</li> <li>• Annual Hours of Excessive Delay Per Capita*</li> <li>• 2- and 4-year Total Emission Reductions for each applicable criteria pollutant and precursor*</li> </ul>
5. Congestion and Reliability	<ul style="list-style-type: none"> <li>• Reduce the frequency of recurring and non-recurring congestion on the freight system</li> </ul>	<ul style="list-style-type: none"> <li>• Annual hours of truck delay (INRIX, NCDOT, SCDOT)</li> <li>• Travel Time Index (Texas Transportation Institute Annual Mobility Report)</li> <li>• Number of chokepoints reduced (INRIX, NCDOT, SCDOT)</li> </ul>



Freight Mobility Plan Goals	Freight Mobility Plan Objectives	Performance Measures (source of data)
6. Performance and Accountability	<ul style="list-style-type: none"> <li>• Decrease the costs of freight movement by reducing empty backhaul movements</li> <li>• Improve freight system operations and information sharing to benefit regional planning and decision making through improvements in technology</li> <li>• Increase freight knowledge and expertise by planners and elected officials throughout the region</li> <li>• Implement a performance-based tracking process to determine how well the freight system is functioning relative to freight investments</li> </ul>	<ul style="list-style-type: none"> <li>• Annual hours of truck delay (INRIX, NCDOT, SCDOT)</li> <li>• Number of empty backhaul movements (Source TBD)</li> </ul>
7. Regional Coordination	<ul style="list-style-type: none"> <li>• Improve coordination among regional agencies responsible for freight transportation planning and implementation</li> <li>• Engage private sector freight stakeholders to inform freight transportation planning and decision making</li> </ul>	<ul style="list-style-type: none"> <li>• Establishment of coordination policies to promote communications between regional agencies and private entities</li> <li>• Number of multi-jurisdictional freight planning efforts and freight infrastructure improvements</li> <li>• Number of participants in regional freight stakeholder meetings (Freight Advisory Committee, CCOG)</li> </ul>

*\* Proposed performance measures in the Federal Notice of Proposed Rulemaking (NPRM) to propose national performance management measure regulations to assess the performance of the National Highway System, Freight Movement on the Interstate System, and the Congestion Mitigation and Air Quality Improvement Program, as required by the Moving Ahead for Progress in the 21st Century Act (MAP-21) and the Fixing America's Surface Transportation Act ("FAST Act").*

### 8.4.1 Application and Implementation of Performance Measures

The project partners can use these performance measures to set performance targets which will define acceptable levels of performance from the perspective of the decision maker and can be adjusted over time to reflect reasonable performance expectations in light of funding constraints. In addition, these performance measures and their associated targets allow the project partners to monitor the efficiency and effectiveness of the freight projects that have been prioritized.

Development of freight performance measures can be complex. Most importantly, the performance measures must be specific, measurable, attainable, realistic and timely. They are only valuable if they can be re-produced and sustained over a sufficient period of time to identify trends and impacts of changes to the system. Performance measures for freight need to be tested, refined, and perhaps replaced on a regular cycle, both to keep up with changing issues as well as to take advantage of new technologies for collecting, processing, and displaying data. Like the freight system itself, performance measures cannot be static.

## 8.5 REGIONAL FREIGHT PRIORITIZATION OF PROJECTS AND POLICIES

A prioritization process was created to assist decision-makers in identifying the freight projects and policies that 1) have the largest impact on freight needs and 2) best address the goals and objectives of the Freight Plan. Additional background on the prioritization framework is detailed in **Appendix C**. The purpose and process for evaluating projects is described below. It is important to note that this Freight Plan should guide other local and state planning efforts in the identification of needs and prioritization as they relate to freight mobility. It is not suggested that this supersede locally established or state mandated prioritization processes.

### 8.5.1 Defining Freight Project Relevance









There are three categories to define a project’s and policy’s freight relevance.

- **Freight focused** – Addresses a specific freight transportation need.
- **Freight related** – Addresses multiple transportation concerns, of which freight is one element.
- **Freight impacted** – Addresses general transportation needs; however, freight mobility may be positively affected.









### 8.5.2 Prioritization Framework

The projects and policies are defined based on the three freight relevance categories and then prioritized. The prioritization framework is intended to guide future investments. Funding availability, environmental restrictions, political considerations, or other factors influenced the rankings. The freight prioritization criteria and factors organized by the Freight Plan’s goals are listed below. Reinforcing the intention of this serving as a guiding document, not a funded programmatic transportation plan, prioritization is represented by graphical pie charts, not numeric scoring or ranking.









#### Goal 1: Economic Competitiveness and Efficiency

Project Prioritization	Criteria	Factors
<ul style="list-style-type: none"> <li>• Is on the defined Strategic Freight Network</li> <li>• Improves access to/from existing or developing freight hubs</li> <li>• Preserves freight reliant jobs</li> <li>• Improves freight network access</li> <li>• Improves access to freight generators</li> <li>• Improves access among two or more modes</li> <li>• Supports retention or expansion of business</li> <li>• Supports or expands freight related land use</li> </ul>	 <b>Freight Impacted</b>	 <b>Does not improve</b>
	 <b>Freight Related</b>	 <b>Somewhat improves</b>
	 <b>Freight Focused</b>	 <b>Improves</b>
		 <b>Significantly improves</b>
		 <b>Greatly improves</b>









**Goal 2: Safety and Security**

Project Prioritization	Criteria	Factors
<ul style="list-style-type: none"> <li>Reduces number of weight restricted bridges</li> <li>Improves geometric conditions</li> <li>Improves high truck crash locations</li> <li>Improves at-grade crossings</li> <li>Improves truck parking availability</li> <li>Improves safety/security at facilities (parking, intermodal, etc.)</li> <li>Improves freight incident response times</li> <li>Educates the public about freight system safety and security issues</li> </ul>	 <b>Freight Impacted</b>	 <b>Does not improve</b>
	 <b>Freight Related</b>	 <b>Somewhat improves</b>
	 <b>Freight Focused</b>	 <b>Improves</b>
		 <b>Significantly improves</b>
		 <b>Greatly improves</b>









**Goal 3: Infrastructure Preservation & Maintenance**

Project Prioritization	Criteria	Factors
<ul style="list-style-type: none"> <li>Improves or maintains existing pavement to a state of good repair</li> <li>Improves structurally deficient bridges</li> <li>Improves rail lines to increase allowable speeds</li> <li>Maintains air cargo facilities</li> </ul>	 <b>Freight Impacted</b>	 <b>Does not improve</b>
	 <b>Freight Related</b>	 <b>Somewhat improves</b>
	 <b>Freight Focused</b>	 <b>Improves</b>
		 <b>Significantly improves</b>
		 <b>Greatly improves</b>









**Goal 4: Environmental Stewardship**

Project Prioritization	Criteria	Factors
<ul style="list-style-type: none"> <li>Reduces air emissions</li> <li>Reduces impact to wetlands and water quality</li> <li>Reduces energy consumption</li> <li>Reduces other adverse residential and community impacts</li> <li>Separates freight operations from community activities</li> </ul>	 <b>Freight Impacted</b>	 <b>Does not improve</b>
	 <b>Freight Related</b>	 <b>Somewhat reduces</b>
	 <b>Freight Focused</b>	 <b>Reduces</b>
		 <b>Significantly reduces</b>
		 <b>Greatly reduces</b>









**Goal 5: Congestion & Reliability**

Project Prioritization	Criteria	Factors
<ul style="list-style-type: none"> <li>Improves bridges with vertical clearance issues or weight restrictions</li> <li>Addresses freight bottlenecks</li> <li>Improves multimodal connections</li> <li>Improves system capacity and/or freight operations</li> <li>Establishes or improves access to intermodal, transload, and/or air cargo facilities</li> <li>Improves rail/truck at-grade crossing delays</li> <li>Improves air cargo facilities for increased throughput</li> </ul>	 <b>Freight Impacted</b>	 <b>Does not improve</b>
	 <b>Freight Related</b>	 <b>Somewhat improves</b>
	 <b>Freight Focused</b>	 <b>Improves</b>
		 <b>Significantly improves</b>
		 <b>Greatly improves</b>

**Goal 6: Performance & Accountability**

Project Prioritization	Criteria	Factors
<ul style="list-style-type: none"> <li>Uses ITS technology to improve freight system operations and information sharing</li> <li>Assists in reducing the cost of freight movement</li> </ul>	 <b>Freight Impacted</b>	 <b>Does not assist</b>
	 <b>Freight Related</b>	 <b>Somewhat assists</b>
	 <b>Freight Focused</b>	 <b>Assists</b>
		 <b>Significantly assists</b>
		 <b>Greatly assists</b>

**Goal 7: Regional Coordination**

Project Prioritization	Criteria	Factors
<ul style="list-style-type: none"> <li>Increases coordination among public agencies responsible for freight transportation planning and implementation.</li> <li>Increases coordination between the private and public section with regards to freight industry planning and priorities.</li> </ul>	 <b>Freight Impacted</b>	 <b>Does not assist</b>
	 <b>Freight Related</b>	 <b>Somewhat assists</b>
	 <b>Freight Focused</b>	 <b>Assists</b>
		 <b>Significantly assists</b>
		 <b>Greatly assists</b>

## 9 FREIGHT IMPROVEMENT RECOMMENDATIONS

One of the final outcome of this planning effort is the identification of freight needs in the Greater Charlotte Region. This Freight Plan includes a series of recommendations that support the objectives identified in the early stages of the Freight Plan development.

### 9.1 FREIGHT NEEDS & OPPORTUNITIES IDENTIFICATION

These needs were identified throughout the planning process and originated from three primary sources; 1) the existing conditions analysis, 2) stakeholder engagement, and 3) a review of best practices in freight planning.

The needs analysis includes all the technical data driven analysis used to determine the current and projected future conditions of the freight system. Examples of the type of analysis conducted include, data related to system performance such as congestion and freight bottlenecks and data related to safety such as locations with high crash rates. In any public planning process, stakeholder engagement is a key source of information for identifying both needs and proposed recommendations. Many of the identified needs originated from study stakeholders including both public agency and private freight industry participants. The review of best practices provided an opportunity to survey the state of the practice in freight and transportation planning and identify applicable strategies with potential benefits to the Charlotte region.

All of the identified needs gathered from these sources were reviewed, organized and prioritized into a format of recommendations suitable for implementation. These recommendations vary both in type, some are policy based, while others are project based; and opportunity for implementation, some are easily implemented while others may require long term efforts and coordination. These needs and recommendations are grouped into three categories: General Freight, Trucking Related, and Rail Related.

### 9.2 FREIGHT RECOMMENDATIONS PRIORITIZATION RESULTS

The results of the needs and opportunities identification and prioritization effort are summarized in **Tables 9.1, 9.2 and 9.3** for general freight, trucking and rail respectively. The tables identify the source of the recommendation, provide the recommendation as written, and use the graphical pie charts to show the level to which the recommendation is related to the freight criteria and implements the freight factors discussed previously. It is important to reiterate that this Freight Plan should guide other local and state planning efforts in the identification of needs and prioritization as they relate to freight mobility. It is not suggested that this supersede locally established or state mandated prioritization processes.

The full table providing additional information as to each recommendation and their prioritization is found in **Appendix G**. The full General Freight Needs table found in Appendix G includes a best practices column which assigns each of the recommendations to one of the four best practices



categories. Additional details and information on freight best practices, best practices in related efforts, and the four categories used in this plan are found in **Appendix F**.

### 9.2.1 General Freight Recommendations

General freight recommendations encompass programs and policies that would support overall freight mobility in the region without being tied specifically to one mode of transportation of another. An exception to this is the inclusion of recommendation to support the ongoing Airport Area Strategic Development Plan, drafted in Fall 2016. The significance of this plan, reinforced as a recommendation for continued coordination in planning, encompasses all modes of freight transportation. The significance of air cargo in the Charlotte region is reinforced by the trends of forecast commodity flows with higher value, lower tonnage goods, such as electronics and pharmaceuticals that can be transported by air. These general freight recommendations are provided in **Table 9.1**. The general freight recommendations apply to the entire Greater Charlotte Region.

The further dispersion of freight-using and freight-generating plants or facilities away from the existing pattern of corridors and concentrations creates six main transportation impacts:

1. Conflicts with rural passenger traffic;
2. Increases in the maintenance costs of rural roads due to increased weight loads and frequency of use;
3. Greater emissions generation in more rural and agricultural environments;
4. A reduction of economies of scale for freight input projects;
5. Conflicts with non-industrial and residential land uses; and,
6. Increased travel times and distance to markets increasing costs to businesses and final consumers.

This presentation of data should provide planners with opportunities to reduce conflicts and consolidate freight travel demands across modes of transportation. This should provide education for planners not familiar with the impacts of freight related land uses as well as assist in the prioritization of transportation planning to support safe interactions between roadway and railroad users when conflicts cannot be avoided.

Table 9.1: General Freight Recommendations

Source	Recommendation	Detail
Best Practices	CCOG to dedicate staff to freight planning and/or coordination.	A dedicated staff person would be point person for all future freight related planning and coordination efforts in the region.
Stakeholder Input, Best Practices	CCOG and planning partners should continue to work with multi-state partners to make corridor-wide system decisions.	The relationships and coordination efforts initiated during the development of this Freight Plan must stay intact to maintain the momentum of freight planning implementation.
Stakeholder Input, Best Practices	Undertake an effort to educate the public on the importance of freight to the Charlotte region, including elected officials, and the general public.	Utilize social media to raise the awareness of freight mobility, safety statistics, and other information related to freight transportation.
Stakeholder Input, Best Practices	Coordinate freight plans and programs of municipalities, counties, MPOs, RPOs, COGs and state departments of transportation.	Continue the working relationships of the integration of local plans into the Freight Plan to have reciprocal integration of Freight Plan elements into local and state planning efforts.
Stakeholder Input, Best Practices	Establish protocol for a functioning Freight Advisory Committee for the region.	Build upon the current activities of the CCOG Freight Advisory Committee, formalize a schedule of meetings and activities.
Stakeholder Input, Best Practices	Establish the identified “logistics villages” within the greater Charlotte region. The goal of logistics villages is to help increase economic activity and transportation efficiency at these sites, such as access between intermodal and private distribution centers, rest and parking areas for drivers, and fixing choke points and bottlenecks.	This is an opportunity for Public Private Partnership.
NCDOT State Rail Plan (2015)	Support access to the Project Legacy Megasite in Union County.	Raise awareness of economic development potential and support transportation infrastructure around the site.
Stakeholder Input	Increase and/or raise awareness of training opportunities for careers in logistics and transportation.	Partner with local technical training programs and colleges to promote training opportunities.
Stakeholder Input	Develop local transportation plans for areas adjacent to freight intermodal facilities.	Incorporate freight related transportation needs into planning efforts for freight related land use development plans. This includes traffic impact analyses and necessary modal access.
Stakeholder Input	Prioritize intermodal connection projects, as these projects are often the most conducive to reducing overall supply chain costs.	This should be used to inform MPO/TPO planning partners of the prioritization of intermodal connectivity in transportation planning.

Source	Recommendation	Detail
Stakeholder Input	Develop a freight network resiliency plan. This plan would help bring freight dependent industries back online after an emergency event and would assist with hurricane relief efforts. This plan should be developed with local or state homeland security partners.	
Stakeholder Input	Create a commercial vehicle crash database. Extract commercial vehicle crash data from the statewide database to identify patterns or particular situations to address.	Data compiled in development of the Freight Plan; identify staff resources to maintain and provide data for interested parties.
Best Practices	Ensure freight representation and participation by private sector in the North Carolina, South Carolina state and MPO planning processes.	Draw on members of Freight Advisory Committee for participation in other plan steering committees or in other plan stakeholder participation.
Stakeholder Input, Best Practices	Prioritize projects designed to improve freight mobility and eliminate freight bottlenecks.	Codify prioritization criteria.
Best Practices	Understand funding available for freight including traditional and non-traditional funding sources.	Incorporate freight funding education into overall freight awareness campaign. Include freight funding programs in the regional coordination efforts.
Best Practices	Leverage public-private partnerships for funding non-highway improvements.	Trucking terminals, distribution centers, intermodal facilities, air cargo, and railroad improvements are good examples of private-funded projects that would benefit from public guidance.
Best Practices	Partner with local, state and federal agencies to expand programs that support fuel efficiency in the transportation industry.	Partner with Centralina Clean Fuels Coalition to engage freight industry in efforts.
Best Practices	Support the accelerated retirement of older model year heavy duty vehicles and rail equipment focusing on idle reduction and low emissions technology.	Partner with Centralina Clean Fuels Coalition to identify grant programs for upfitting outdated equipment with more efficient engines/technologies.
Best Practices	Support improved inspection and maintenance of vehicles to minimize emission.	Partner with Centralina Clean Fuels Coalition to identify programs to support maintenance programs for equipment in the freight industry.
Best Practices	Identify anti-idling policies to enact in freight districts around the region (railyards, queuing areas).	Partner with Centralina Clean Fuels Coalition to engage freight industry in efforts.

Source	Recommendation	Detail
Best Practices	Expand the use of Intelligent Transportation Systems (ITS), technology, and innovation to improve the flow of freight.	Examples include surveillance systems to identify congestion or traffic disruptions, variable message signing, electronic tolling, ramp control/metering during peak traffic hours.
Best Practices	Use technological solutions to address truck parking such as real time parking availability, reservation systems, cashless payment, and navigation using smart phone technology.	Partner with state efforts to improve truck parking programs.
Best Practices	Expand the use of automated enforcement such as weigh stations.	N/A
Best Practices	Expand the use of automated truck permitting, particularly for county and state roads.	N/A
Best Practices	Reduce the number of at-grade highway rail crossings where feasible.	N/A
Best Practices	Facilitate the sharing of information, best practices and training among local Emergency Response agencies to improve Traffic Incident Management. Support the creation of local incident management teams and regional Incident Management Task Forces (IMTF) with specific area assignments.	Identify opportunities to coordinate with NCDOT, SCDOT and local agencies on Traffic Incident Management and Emergency Response Management.
Best Practices	Maintain coordination with the Charlotte International Airport Area Strategic Development Plan.	This plan provides the opportunity for continued coordination in planning as it encompasses all modes of freight transportation.

## 9.2.2 Trucking Related Recommendations

Trucking related recommendations are focused on the mobility and safety of truck activity in the study area. These recommendations listed in **Table 9.2** have the potential to benefit other modes of transport but are primarily truck-focused. Those that are geographically referenced are illustrated in **Figure 9.1** and referenced by the map identifier in **Table 9.2**.

*Table 9.2: Trucking Related Recommendations*

Map Identifier	Source	Recommendation	Detail
Not Mapped	Stakeholder Feedback	Provide training for truck drivers (CDL Programs-CPCC).	Partner with local training centers to raise awareness and promote training opportunities in the region.
Not Mapped	Stakeholder Feedback	Reduce risk to non-motorized transportation users. Clearly sign and mark bicycle and pedestrian facilities where the Strategic Freight Network and state/local bike routes overlap.	GIS operation to overlay bicycle and pedestrian networks with Strategic Freight Network.
Not Mapped	Truck Parking Analysis	Identify areas of needed truck parking and rest areas along the region's Strategic Freight Network.	GIS operation illustrating areas where truck parking utilization has exceeded available capacity; site selection study within Corridors and Concentration areas and Strategic Freight Network.
Not Mapped	Bridge Inventory, Stakeholder Feedback	Address and prioritize functionally obsolete and structurally deficient bridges on the region's Strategic Freight Network.	Inventory bridges on the Strategic Freight Network and prioritize needs.
Not Mapped	Stakeholder Feedback	Conduct educational efforts to counter public perception that increases in truck size and weight limits will impact roadway quality and compromise safety.	
Not Mapped	Stakeholder Feedback	Incident management should be prioritized for responding to increased congestion, safety issues during highway construction, and impacts of vehicular accidents.	Promote enforcement of North Carolina's "Quick Clearance Law" and South Carolina's "Steer it and Clear it" Law.
Not Mapped	Stakeholder Feedback	Program additional transportation funding mechanisms, particularly for highway maintenance and construction.	Focus on identified deficient bridges, "Corridors and Concentrations," and Strategic Freight Network for preservation and expansion of roadway access to major facilities.
Not Mapped	Stakeholder Feedback	Program improvements to infrastructure to handle heavy and wide shipments.	Focus on identified deficient bridges, "Corridors and Concentrations," and Strategic Freight Network for preservation and expansion of roadway access to major facilities.



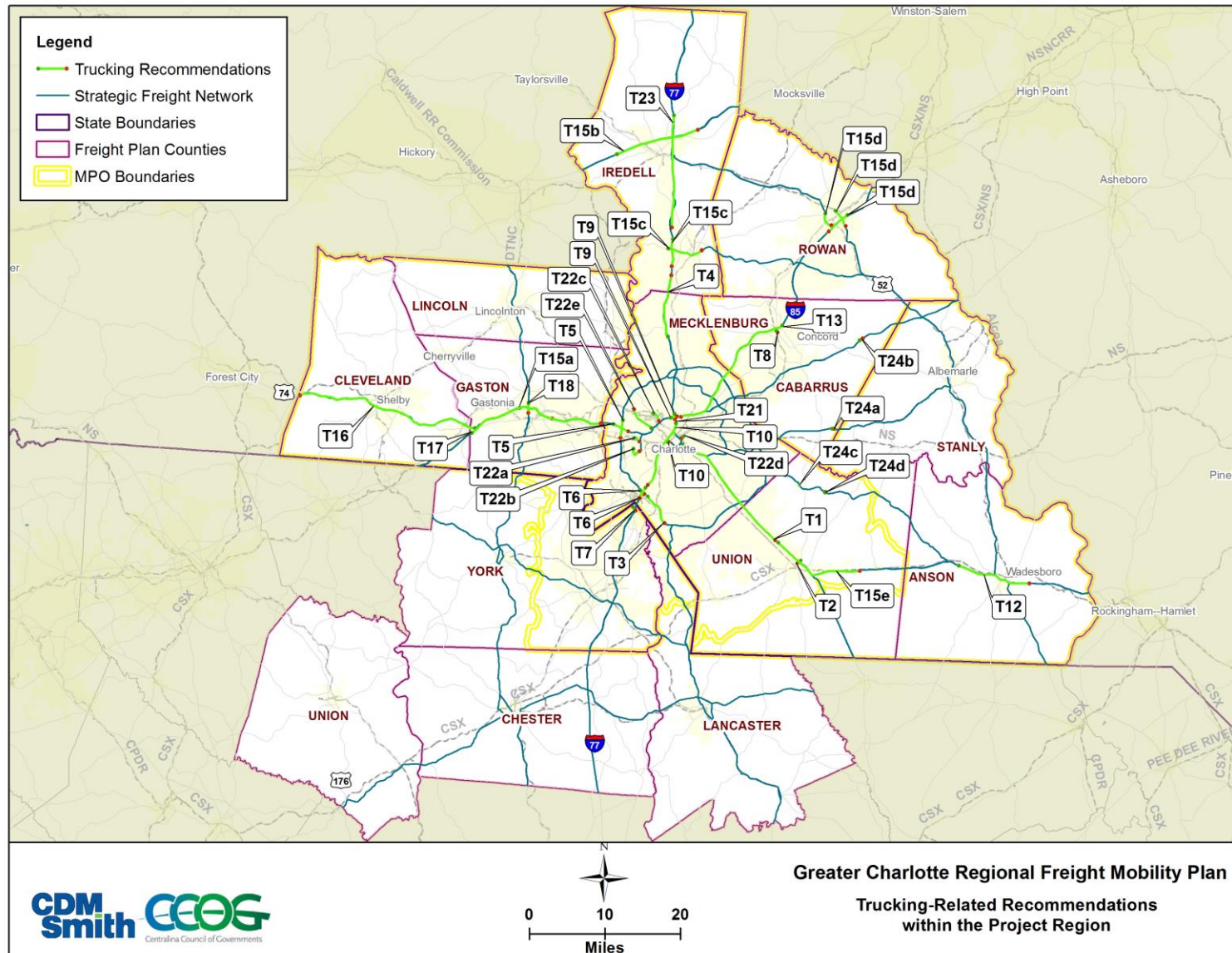
Map Identifier	Source	Recommendation	Detail
Not Mapped	Stakeholder Feedback	Make improvements to inadequate sections of rural highways.	Focus on identified deficient bridges, "Corridors and Concentrations," and Strategic Freight Network for preservation and expansion of roadway access to major facilities.
Not Mapped	Stakeholder Feedback	Identify and address concerns related to perceived/actual high costs and inability to ship products to the ports.	Partner with NCDOT and SCDOT on statewide and multistate planning efforts to identify pathways connecting the Charlotte region to international marine port terminals
Not Mapped	Stakeholder Feedback	Encourage alternative options CNG/LNG for trucks-including fueling stations	Focus on identified "Corridors and Concentrations" for preservation and expansion of roadway access to major facilities. Partner with NCDOT and SCDOT for regionally identified corridors.
Not Mapped	Stakeholder Feedback	Participate in the FAST Act Alternative Fuel Corridors program	Partner with Centralina Clean Fuels Coalition, NCDOT and SCDOT on statewide and multistate planning efforts to identify long distance corridors qualifying for federal designation.
Not Mapped	Stakeholder Feedback	Continue to Identify and close any first/last mile gaps near major intermodal centers and manufacturing hubs	Focus on identified "Corridors and Concentrations" for preservation and expansion of roadway access to major facilities.
T1	Bottleneck, Safety	US 74 in Mecklenburg and Union Counties (Congestion improvement project and safety concerns)	Evaluation to address both congestion and safety.
T10	Bottleneck, Safety	I-77 at I-277/US Hwy 74	Evaluation needed to address safety, capacity and operational improvements.
T12	Stanly County Comprehensive Plan, Safety	Evaluate proposed improvements on US 74 from Old Prison Camp Road (SR 1249) through Wadesboro to east of Firetower Road (SR 1731)	Evaluation needed to address safety, capacity and operational improvements.
T13	Safety data	I-85 from Kannapolis to Charlotte safety improvements	Evaluation of safety improvements possible in operations, capacity, lighting, etc.
T15(a-e)	Safety data	Evaluate Crash hotspots identified in densely populated areas such as Gastonia (T15a), Statesville (T15b), Mooresville (T15c), Salisbury (T15d) and Monroe (T15e)	Evaluation of safety improvements possible in operations, capacity, lighting, etc.

Map Identifier	Source	Recommendation	Detail
T15a	Safety data	Evaluate improvements on I85 near Gastonia	Evaluation of safety improvements possible in operations, capacity, lighting, etc.
T15b	Safety data	Evaluate improvements on I40 near Statesville	Evaluation of safety improvements possible in operations, capacity, lighting, etc.
T15c	Safety data	Evaluate improvements on NC152 near Mooresville	Evaluation of safety improvements possible in operations, capacity, lighting, etc.
T15d	Safety data	Evaluate improvements on I85 Interchanges near Salisbury	Evaluation of safety improvements possible in operations, capacity, lighting, etc.
T15e	Safety data	Evaluate improvements on US74 near Monroe	Evaluation of safety improvements possible in operations, capacity, lighting, etc.
T16	GCLMPO 2040 MTP, Safety	US74 Corridor through Cleveland County (improvements to capacity, operations and geometric design)	Evaluation needed to address safety, capacity and operational improvements.
T17	GCLMPO 2040 MTP, Safety	I85 Corridor through Gaston County (improvements to capacity, operations and geometric design)	Evaluation needed to address safety, capacity and operational improvements.
T18	GCLMPO 2040 MTP, Safety	US 321 at I85 Interchange Improvement	Evaluation needed to address safety, capacity and operational improvements.
T2	Stanly County Comprehensive Transportation Plan (2012)	US 74 at US 601	Evaluation needed to address capacity and operational improvements.
T21	Safety data	I85 Corridor from Charlotte to I485 (improvements to capacity, operations and geometric design)	Evaluation of safety improvements possible in operations, capacity, lighting, etc.
T22a-e	Stakeholder Feedback	Improve operations and access between intermodal centers and private distribution centers.	Inventory condition of intermodal connectors on NHS, as priority.
T22a	Intermodal Connectivity	For approved NHS Connector NC 4A (SR 1490, Charlotte-Douglas Airport Connector), preserve the capacity and safe operations of all Approved NHS Intermodal Connectors.	Incorporate each facility into local transportation plans.

Map Identifier	Source	Recommendation	Detail
T22b	Intermodal Connectivity	For approved NHS Connector NC4A (NC160, Charlotte-Douglas Airport Connector), preserve the capacity and safe operations of all Approved NHS Intermodal Connectors.	Incorporate each facility into local transportation plans.
T22c	Intermodal Connectivity	For approved NHS Connector NC3R (Hovis Road and NC16, CSX Freight Intermodal Facility), preserve the capacity and safe operations of all Approved NHS Intermodal Connectors.	Incorporate each facility into local transportation plans.
T22d	Intermodal Connectivity	For approved NHS Connector NC7R (N Brevard St and Caldwell St, Norfolk Southern Corporation), preserve the capacity and safe operations of all Approved NHS Intermodal Connectors.	Incorporate each facility into local transportation plans.
T22e	Intermodal Connectivity	For approved NHS Connector NC2L (NC27, Petroleum Pipeline Facility), preserve the capacity and safe operations of all Approved NHS Intermodal Connectors.	Incorporate each facility into local transportation plans.
T23	Safety data	Evaluate I-77 through southern Iredell County (safety improvement project).	Evaluation of safety performance.
T24a-d	Stakeholder Feedback	Address the 4 posted bridges on Strategic Freight Network to eliminate weight restricted bridges on the CCOG Strategic Freight Network.	Inventory bridges on the Strategic Freight Network and prioritize needs.
T24a	Stakeholder Feedback	Improve Bridge 120022 (NC24 over Rocky River).	Currently has a posted Single Unit Truck Gross Weight Limit of 41k and Tractor Trailer Truck Gross Weight of 44k.
T24b	Stakeholder Feedback	Improve Bridge 120103 (NC49 over Dutch Buffalo Creek).	Currently has a posted Single Unit Truck Gross Weight Limit of 24k and Tractor Trailer Truck Gross Weight of 30k.
T24c	Stakeholder Feedback	Improve Bridge 890029 (NC218 over Goose Creek).	Currently has a posted Single Unit Truck Gross Weight Limit of 32k and Tractor Trailer Truck Gross Weight of 38k.
T24d	Stakeholder Feedback	Improve Bridge 890058 (NC218 over Crooked Creek).	Currently has a posted Single Unit Truck Gross Weight Limit of 38k and Tractor Trailer Truck Gross Weight of 42k.

Map Identifier	Source	Recommendation	Detail
T3	CRTPO 2040 MTP, Bottleneck	Evaluate locations of I-77 and I-485 (South) near Pineville (congestion improvement project).	Evaluation needed for added lanes, managed lanes, upgrade geometric standards, and/or constructing bypasses.
T4	CRTPO 2040 MTP, Bottleneck, Safety	Evaluate I-77 near Lake Norman (congestion improvement project).	Evaluation needed for added lanes, managed lanes, upgrade geometric standards, and/or constructing bypasses.
T5	CRTPO 2040 MTP, Bottleneck	Evaluate I-85 at I-485 near the Charlotte-Douglas Airport (congested interchange improvement).	Evaluation needed for added lanes, managed lanes, upgrade geometric standards, and/or constructing bypasses.
T6	Bottleneck, Safety	I-77 at I-485 (Congestion and safety improvement project).	Evaluation needed to address safety, capacity and operational improvements.
T7	Bottleneck, Safety	US 21 near I-77 (Congestion and safety improvement project).	Evaluation needed to address safety, capacity and operational improvements.
T8	Bottleneck, Safety	US 29 near I-85 (Congestion and safety improvement project).	Evaluation needed to address safety, capacity and operational improvements.
T9	Bottleneck, Safety	I-77 at I-85 (Congestion and safety improvement project).	Evaluation needed to address safety, capacity and operational improvements.
Not Mapped	Stakeholder Feedback	Identify corridors where non-traditional improvements may significantly reduce congestion (e.g. Intelligent Transportation Systems (ITS), Managed Lanes, Value Pricing, etc.).	Incorporate this scope of work into corridor improvements planning and concept design.

Figure 9.1: Trucking Related Recommendations





### 9.2.3 Freight Rail Related Recommendations

Freight Rail related recommendations are focused on the mobility and safety of rail based activity in the study area. These recommendations presented in **Table 9.3** have the potential to benefit other modes of transport but are primarily railroad-focused. Those that are geographically referenced are illustrated in **Figure 9.2** and are referenced by the map identifier in **Table 9.3**.

*Table 9.3: Freight Rail Related Recommendations*

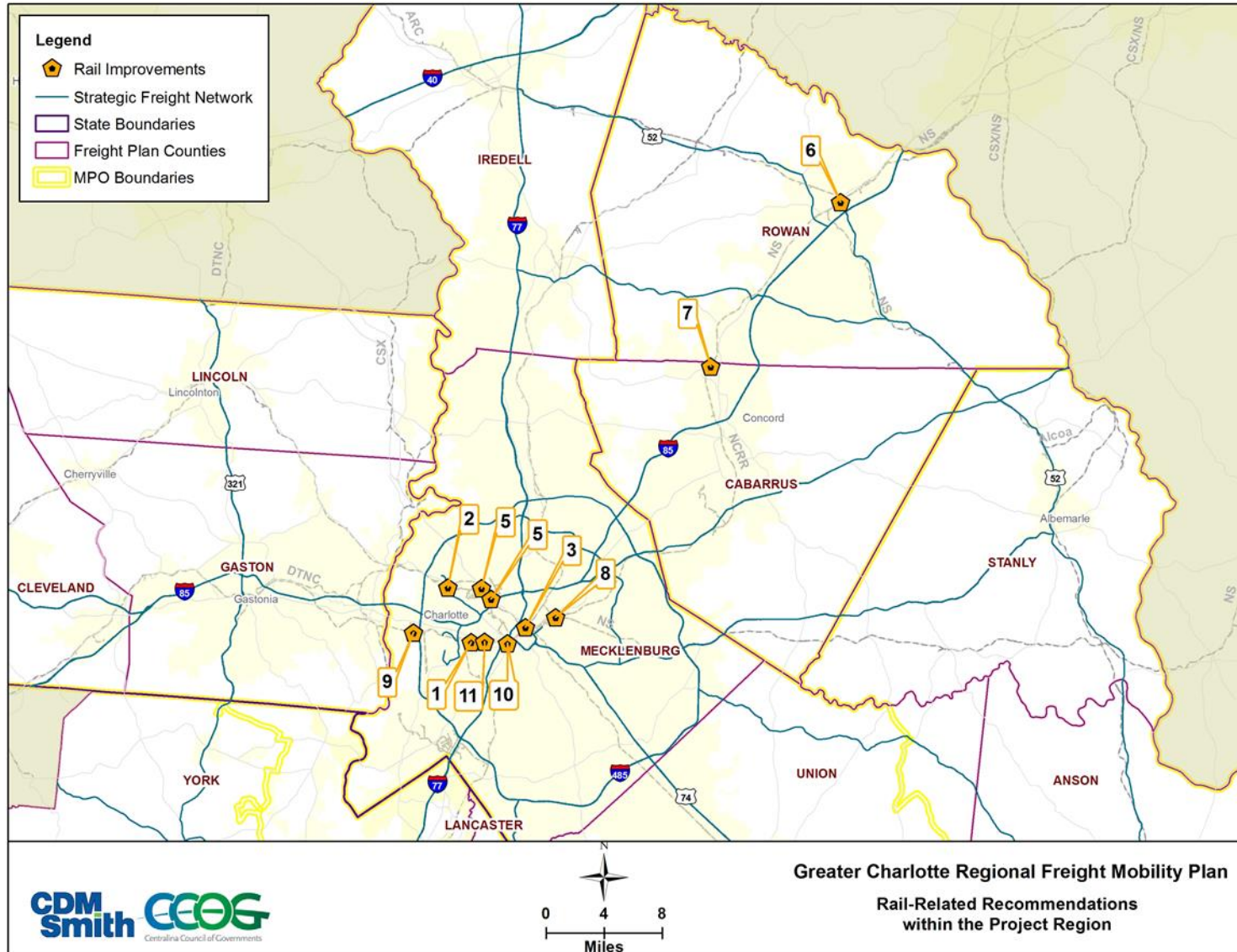
Map Identifier	Source	Recommendation	Detail
Not Mapped	RFATS 2035 L RTP	Review existing policies and practices on the preservation of rail-served industrial sites and preservation of industrial railroad corridors.	
1	CRTPO STIP 4.0	Charlotte Junction Wye— Impacts the connection between the NS Main line and the R line.	This project consists of a new wye connection track (approximately 0.5 miles in length) on new location in between the Norfolk Southern Railway (NS) Main line (at approximate MP 381.5) and the NS "R" line (at approximate MP R-0.5), reconstruction of the existing South Advance control point on the NS "R" line, and construction of a new control point on the NS Main line. Unfunded Statewide Mobility Project, eligible for Regional Impact local input points.
3	Stakeholder Feedback	ADM rail crossing in downtown Charlotte—Impacts the NS Main line and the CSXT SF line.	Grade separate the existing diamond where CSX and NS cross at-grade to improve freight movement efficiencies and reduce conflicts between freight movements.
8	CRTPO STIP 4.0	The Aberdeen Carolina & Western Railway (ACW)— Operations create bottlenecks within CSXT's yard in North Davidson (Market to increase usage of this significant rail line).	Relocate AC&W Railroad on new alignment from current alignment at Sugar Creek Rd. heading southwest to intersect the NCRR near Craighead Rd.
2 & 5	Stakeholder Feedback/ CRTPO STIP 4.0	The CSXT terminal operation at the northwest yard — Impacts local roadway networks at numerous at-grade crossings.	Grade separate Hovis Road and Hoskins Road at CSX tracks to improve roadway operations and freight rail operations; improvements to the yard for operation efficiency.
Not Mapped	Stakeholder Feedback and Safety Data	Implement Charlotte Railroad Improvement & Safety Program Projects (CRISP).	Various projects identified within CRISP are under construction, but for those that have not been allocated funds, continue to investigate funding opportunities.

Map Identifier	Source	Recommendation	Detail
Not Mapped	Stakeholder Feedback	Greater Charlotte Region Traffic Separation Studies (TSS).	At-grade rail crossing studies (TSS): A TSS will evaluate the need for improving the rail at-grade crossings' warning systems or reducing and eliminating at-grade crossing to address potential safety conflicts; thus allowing partnerships with the railroads to prioritize grade crossing improvements.
10	STIP / Stakeholder Feedback	Charlotte Locomotive and Railcar Maintenance facility construction	Build a locomotive and passenger railcar maintenance facility southwest of uptown Charlotte to replace the current maintenance facility next to the Norfolk Southern Charlotte Yard.
Not Mapped	Stakeholder Feedback	Partner with the development community to identify and find solutions for existing or forecast terminal capacity constraints. Support efficient transfer of bulk commodities such as grain, coal, oil, etc. requires adequate intermodal operations capacity to move goods from production to consumption markets.	Working with the Class I railroads and local stakeholders in ensuring programs and policies are developed to ensure improved operation efficiencies.
Not Mapped	Stakeholder Feedback	Support an effort to improve the ability of short line railroads to accommodate 286,000 lb. standard rail cars.	Work with Class I and shortline railroads in changing the weight limits and identifying funding sources to assist in shortline railroads to upgrade rails.
Not Mapped	Stakeholder Feedback	Partner with state agencies to explore the potential for a state rail program to take advantage of federal programs that require a match would help address the 286k track limitations that the system faces.	Need to work with State Legislatures to increase state funding towards Rail Projects and increase the STI weighted formula for freight projects.
Not Mapped	Stakeholder Feedback	Support opportunities for Intermodal terminal development and multimodal diversity.	This includes working with the Class I railroads and local stakeholders to ensure programs and policies are developed to ensure improved operation efficiencies.
Not Mapped	Stakeholder Feedback	Support the Phase III Expansion of CSXT's Charlotte Intermodal Terminal.	A policy decision would support Line 68 projects for improving the operations efficiency for the CSX terminal as well as reduce vehicular-train conflicts; thus improving the terminal and local roadway operations.

Map Identifier	Source	Recommendation	Detail
Not Mapped	Stakeholder Feedback	Retain existing rail corridors and halt track removal.	By ensuring rail corridors stay intact and that adding, not reducing, track improves the efficiency of freight movements on rail, reducing the dependency on long-haul trucking movements.
Not Mapped	Stakeholder Feedback	Continue direct support for short-line railroad infrastructure improvements.	Short-line railroads provide local transportation options to industries, thus improves local economic benefits.
Not Mapped	Stakeholder Feedback	Expand capacity in high-use rail corridors, including the expansion into double/triple track configurations.	With the Piedmont Improvement Projects between Charlotte and Raleigh (double track corridor), there will be less conflicts between passenger/freight trains and enhance on-time performance.
Not Mapped	Stakeholder Feedback	Enhance/improve scheduling and coordination with passenger rail service.	With the Piedmont Improvement Projects between Charlotte and Raleigh (double track corridor), there will be less conflicts between passenger/freight trains and enhance on-time performance.
Not Mapped	Stakeholder Feedback	Explore routing options for hazardous materials shipments to avoid highly populated areas.	By utilizing rail to transport hazardous materials reduces the dependency on long-haul trucking movements and reduces safety hazards along heavily congested urban areas and networks.
4	Stakeholder Feedback	Improve rail access to North Carolina Port Authority inland terminal in Charlotte (benefits other inland terminals located in Greensboro & Greer); also includes constructing siding extension at Stouts in Union County.	Double track the existing CSX rail corridor from Wilmington to Charlotte to improve the operation efficiency of the Queen City Express intermodal service.
Not Mapped	Stakeholder Feedback	Raise awareness of environmental justice concerns in rail expansions	Implement policies that require NEPA evaluations for mitigating the impacts to EJ communities on new rail corridors, as well as rail corridor improvements.
Not Mapped	Stakeholder Feedback	Create rail-focused business parks.	By creating rail-focused business parks, truck and freight movements can be centralized and increase the opportunity for intermodal movements.
11	CRTPO STIP 4.0	Clanton Road/ Grade Separation.	Extend Clanton Rd. to Wilkinson Blvd. with a grade separation of the Norfolk Southern Railroad; close the Donald Ross Rd. crossing at the Norfolk Southern Railroad.

Map Identifier	Source	Recommendation	Detail
6	CRMPO STIP 4.0	Salisbury Passenger Rail Station Improvements.	Construct a second platform, underground tunnel to serve second platform: second platform will enhance train operations and increase efficiency by allowing freight trains to pass passenger trains as they sit at passenger rail stations.
7	CRMPO STIP 4.0	Kannapolis Passenger Rail Station Improvements.	Construct a second platform, underground tunnel to serve second platform: second platform will enhance train operations and increase efficiency by allowing freight trains to pass passenger trains as they sit at passenger rail stations.
9	CRMPO STIP 4.0	Old Down Road Grade Separation.	Realign Old Dowd Rd. over Norfolk Southern Railroad west of I-485.

Figure 9.2: Rail Related Recommendations





## 9.3 FREIGHT RECOMMENDATIONS – SHORT TERM, QUICK START OPPORTUNITIES

Recognizing the presented freight recommendations range from relatively inexpensive and easy to implement, to potentially cost-prohibitive or impactful on the physical or human environment, a list of “quick start” recommendations was developed. Each quick start recommendation listed in **Table 9.4** identifies an entity likely responsible for implementation. This subset of recommendations is provided for consideration to reinforce the significance of the Freight Plan as well as maintain the momentum surrounding freight mobility planning initiated by this planning effort. The full detail of the freight improvement recommendations is found in **APPENDIX G**.

*Table 9.4: Short Term, Quick Start Recommendations*

Category	Source	Recommendation	Notes	Potential Implementation Responsibility
<b>GENERAL FREIGHT NEEDS</b>				
Program	Best Practices	CCOG to dedicate staff to freight planning and/or coordination.	This staff person would be responsible for the maintenance of data for sharing with planning partners, supporting the ongoing work of the Freight Advisory Committee.	CCOG
Program	Stakeholder Input, Best Practices	Undertake an effort to educate the public on the importance of freight to the Charlotte region, including elected officials, and the general public.	Utilize in person meetings and social media to push information about freight mobility, current policy and proposed projects that support freight mobility.	CCOG, MPOs, Local Governments
Program	Stakeholder Input, Best Practices	Coordinate freight plans and programs of municipalities, counties, MPOs, RPOs, COGs and state departments of transportation.	To be conducted by CCOG staff; stay engaged in the initiated coordination across agencies.	CCOG
Program	Stakeholder Input, Best Practices	Establish protocol for a functioning Freight Advisory Committee for the region.	To be conducted by CCOG staff; formalize schedule of meetings and activities for the FAC.	CCOG
Program	Stakeholder Input	Create a commercial vehicle crash database. Extract commercial vehicle crash data from the statewide database to identify patterns or particular situations to address.	Data compiled; identify staff resources to maintain and provide data for interested parties.	CCOG, MPOs, Local Governments
Program	Best Practices	Ensure freight representation and participation by private sector in the North Carolina, South Carolina state and MPO planning processes.	To be conducted by CCOG staff; stay engaged in the initiated coordination across agencies. Seek participation by members of the FAC in other planning efforts.	MPOs
Program	Best Practices	Partner with local, state and federal agencies to expand programs that support fuel efficiency in the transportation industry.	Partner with Centralina Clean Fuels Coalition to engage freight industry in efforts.	CCOG

Category	Source	Recommendation	Notes	Potential Implementation Responsibility
Program	Best Practices	Identify anti-idling policies to enact in freight districts around the region (railyards, queuing areas).	Partner with Centralina Clean Fuels Coalition to engage freight industry in efforts.	CCOG
Program	Best Practices	Facilitate the sharing of information, best practices and training among local Emergency Response agencies to improve Traffic Incident Management. Support the creation of local incident management teams and regional Incident Management Task Forces (IMTF) with specific area assignments.	Identify opportunities to coordinate with NCDOT, SCDOT and local agencies on Traffic Incident Management and Emergency Response Management.	CCOG, MPOs, Local Governments
Program	Best Practices	Maintain coordination with the Charlotte International Airport Area Strategic Development Plan.	This plan provides the opportunity for continued coordination in planning as it encompasses all modes of freight transportation.	CCOG, CRTPO
<b>TRUCKING FREIGHT NEEDS</b>				
Program	Stakeholder Feedback	Incident management should be prioritized for responding to increased congestion, safety issues during highway construction, and impacts of vehicular accidents.	Promote enforcement of North Carolina's "Quick Clearance Law" and South Carolina's "Steer it and Clear it" Law.	CCOG, MPOs, Local Governments
Program	Stakeholder Feedback	Participate in the FAST Act Alternative Fuel Corridors program.	Partner with Centralina Clean Fuels Coalition, NCDOT and SCDOT on statewide and multistate planning efforts to identify long distance corridors qualifying for federal designation.	CCOG
Program	Stakeholder Feedback	Identify corridors where non-traditional improvements may significantly reduce congestion (e.g. Intelligent Transportation Systems (ITS), Managed Lanes, Value Pricing, etc.).	Incorporate this scope of work into corridor improvements planning and concept design.	CCOG, MPOs, Local Governments
Program	Stakeholder Feedback	Explore routing options for hazardous materials shipments to avoid highly populated areas.	By utilizing rail to transport hazardous materials reduces the dependency on long-haul trucking movements and reduces safety hazards along heavily congested urban areas and networks.	CCOG, MPOs, Local Governments

## 10 PLAN IMPLEMENTATION PROCESS

Implementation of the freight recommendations requires coordination from local, regional, state and national partners, involving both public and private sectors. Because the CCOG is not directly responsible for land use planning, it is necessary that the freight plan is available to the local municipalities and governmental agencies to facilitate their efforts on comprehensive plan updates, mapping updates of the land use and zoning layers, and conduction of developmental services.

For infrastructure improvements, some of the recommended highway projects are already consistent with the regional MPOs long range transportation plans and Transportation Improvement Program (TIP) and will follow the project development process for implementation. Additional recommended highway projects may either be incorporated into each MPO's unfunded needs process and then moved into the LRTP (should additional funds become available), or be incorporated into the programs of NCDOT and SCDOT for implementation. Where rail, port and airport projects are concerned, this freight plan will be made available to the various stakeholders for reference in their selection of improvement projects.

### 10.1 ACCEPTANCE BY MPO/RPO PARTNERS

The Charlotte Regional Freight Mobility Plan is presented to the Charlotte regional MPO and RPO program and policy boards for acceptance. With a principal goal of this regional planning effort being an increase in regional coordination to raise awareness of freight mobility and incorporate freight elements into transportation planning practices, this request will satisfy the need to begin the process to incorporate the freight plan into their activities. This action will codify the months of effort and participation of members of the Coordinating Committee, and will sustain the ongoing dialogue of supporting freight mobility in the region. By design, the recommendations of this Freight Plan are not given numeric scoring but rather relative prioritization on a regional level. Those recommendations should be considered for further analysis and inclusion in local prioritization processes.

### 10.2 INCORPORATION INTO NC AND SC FREIGHT PLANS

Statewide freight plans are used to guide the long-range freight planning investments for each state with a focus on the state's entire freight network needs and issues. While similar to the first-/last-mile trips, local and regional freight plans are freight planning documentations which represent localized freight issues and needs for improving freight and goods movement on a local scale. These local and regional freight plans serve as puzzle pieces, with each region supplying their local freight needs and issues, filling in these important pieces of the state's overall freight puzzle. Freight planning coordination with the NCDOT and SCDOT needs to be a two-way dialogue, as the Charlotte Regional Freight Mobility Plan will assist each state DOT with local freight needs and issues for inclusion in the overall state freight program, and the state DOTs relaying statewide freight issues and needs which may impact the Charlotte Region.

As regional and MPO freight plans align with statewide freight plans, the statewide freight plans align with the national freight plan. Signed into law on December 4, 2015, the FAST Act provides updated federal guidance for transportation funding, including freight planning and investment. The FAST Act requires the development of a National Freight Strategic Plan, which includes mechanisms to monitor the conditions and performance of the national freight system.

The new bill will increase overall transportation funding by 11 percent over five years, while provide a dedicated source of Federal funding for freight projects, including multimodal projects by establishing both formula and discretionary grant programs to fund projects that would benefit freight movements. Discretionary funding totaling \$4.5 billion over the next five years is included in the bill, and is eligible to States, MPOs, local governments, special purpose districts, and public authorities – including port authorities. An estimated 90 percent of the \$6.3 billion in formula funds in the new freight program will be used for highway projects, leaving up to 10 percent for other modes (ports, railroads, intelligent transportation systems, or better demand management).

Examples of Federal Grant and Loan Programs which are included in the FAST Act:

- TIGER Discretionary Grants
- Congestion Mitigation and Air Quality (CMAQ) program
- Federal Rail Safety Improvement Act of 2008
- Rail Line Relocation and Improvement Capital Grant Program
- Transportation Infrastructure Finance and Innovation Act (TIFIA)
- The Railroad Rehabilitation and Improvement Financing Program
- Section 45G Track Rehabilitation Tax Credit
- Airport Improvement Program (AIP)

The NCDOT began the process of developing a statewide freight plan in Summer 2016. As this process began, the consultant teams for both projects and staff from both CCOG and NCDOT participated in coordination efforts. As the Charlotte Regional Freight Mobility Plan reaches a conclusion, all elements of the plan development are being provided to NCDOT for both consideration and incorporation into the statewide planning effort. It is envisioned that elements of the Charlotte Regional Freight Mobility Plan, specifically the identified goals and objectives, performance measures, and freight improvement recommendations will be most significant in supporting the alignment of planning goals and recommendations of the local planning effort and the statewide planning effort. Consideration of the Charlotte regional strategic freight network, encompassing all modes of transportation, will also provide valuable input to the identification of the statewide freight network and consideration of planning for corridors of significance for statewide freight mobility.

### 10.3 ADOPTION/APPROVAL BY LOCAL GOVERNMENTS AND ECONOMIC DEVELOPMENT ORGANIZATIONS

Moving goods and freight is critical to the Greater Charlotte Region's economy. The development of strategies to target land to preserve for future freight needs will be important as the Charlotte region anticipates more freight to travel through in the upcoming decades. It is recommended that local governments review this Freight Plan and consider approval and/or adoption to take it into consideration and as a reference for future land use decision making.

Placing a priority on developing sites located in existing freight corridors and concentrations which are closest to major freight generators is crucial in preserving the most strategic areas of land for freight related growth. Any new industrial development should be located adjacent to or in proximity of the freight transportation network. Locating close to the freight network will minimize freight impact on the community, while also provide direct access to the network. Once these strategic sites are developed for other uses, it will be difficult to convert them to freight uses in the future. As highlighted in the Freight Plan, alignment in land use and transportation planning in the freight context provides for appropriate infrastructure design that supports both efficient and safe movement for all modes of transportation. This also prevents potential conflicts in modes and land uses.

Coordination of the regional freight land use planning needs to be coordinated with local municipalities and counties, and will need to be adopted into their local zoning and land use planning processes.

### 10.4 REGIONAL COLLABORATION OF PRIVATE & PUBLIC ORGANIZATIONS

As freight volumes in the Charlotte Region are projected to have continued growth, the discussion of regional freight needs and issues should be kept in the forefront of regional coordination. Building on the foundation of the regional freight plan, the continuation of freight group meetings is important to sustaining the discussion of freight with regional partners.

It is recommended that this group continue to meet regularly to share information on freight and economic development related needs and issues that exist within the Charlotte Region, and oversee the implementation of recommended policies and projects from the Charlotte Regional Freight Mobility Plan. As the regional freight program continues to evolve, this group can continue to provide important feedback and direction for future freight developments.

A series of recommendations included in this Freight Plan support the continued activities of the Freight Advisory Committee formed during this plan development as well as other activities designed to raise and maintain the profile of the role freight mobility plays in the regional economy. Implementation of these recommendations, championed by CCOG, will support the critical role the public and private sector organizations play in the condition of the freight transportation infrastructure and network of relationships.





Prepared for:



Prepared by:

