12.Freight

Introduction

Our nation's freight transportation system is a vast, complex network of almost seven million miles of highways, local roads, railways, navigable waterways, airports, and pipelines. The components of this network are linked to each other through thousands of seaports, airports, and intermodal facilities.

This chapter explores recently amended legislation, existing conditions of freight infrastructure, as well as current and future economic and technological trends affecting the movement of freight in the GHMPO region. The goal of this chapter is to rationalize and promote investment and policy decisions that positively enhance the movement of people, goods and services while simultaneously reducing negative impacts on communities and increasing citizens' quality of life in western North Carolina.

Freight planning focuses on developing strategies to manage and improve the safety and efficiency of multimodal freight flows through and within the western piedmont region. It also involves integrating freight priorities into the ongoing comprehensive regional planning process, minimizing the congestion and hazards associated with freight traffic through projects like the separation of problematic at-grade crossing areas, and by promoting the regional economic benefits of freight traffic and logistics industries. It also entails identifying the relationships between freight mobility issues, freight traffic patterns, land use patterns, environmental issues, social equity, and economic development. As in other areas of planning, freight planning is an ongoing and ever-evolving process, but is uniquely critical, as technological advances and socioeconomic trends have pushed this often-overlooked area of transportation into the public eye.

The Fast Act

On December 4, 2015, the Fixing America's Surface Transportation Act (FAST Act) was signed into law. This Act provides 5 years of funding certainty for infrastructure planning and investment, including $305 billion over FY 2016-2020 for all modes. The FAST Act establishes a national policy of maintaining and improving the condition and performance of the National Multimodal Freight Network ("the Network"), described below, to ensure that the Network provides a foundation for the U.S. to compete in the global economy. The FAST Act specifies goals associated with this national policy related to the condition, safety, security, efficiency, productivity, resiliency, and reliability of the Network, and also includes goals to reduce the adverse environmental impacts of freight movement on the Network. These goals are to be pursued in a manner that is not burdensome to state and local governments. (49 U.S.C. 70101). With regard to freight, the FAST Act includes the following two programs:

- National Highway Freight Program: Provides $1.2 billion per year on average for states according to a formula, for construction, operational improvements, freight planning, and performance measures. Up to 10 percent of this budget can be spent on rail, port or intermodal projects. The National Highway Freight Program requires state freight plans.
- FASTLANE Grant Program: Provides $900 million per year on average for competitive grants or Transportation Infrastructure Finance and Innovation Act (TIFIA) loans. These funds can be used for projects on the National Highway Freight Network, National Highway System, rail and intermodal

infrastructure, and rail-highway grade crossings. States, large Metropolitan Planning Organizations, Tribes, localities, and Federal Land Management Agencies may apply.

To implement the two programs above, the FAST Act:

- Requires a national freight strategic plan that presents multi-modal freight policy goals.
- Requires the designation of a National Multimodal Freight Network.
- Requires the designation of a National Highway Freight Network.
- Requires state freight plans
- Encourages state freight advisory committees.

In addition to the new programs introduced by the FAST Act, many existing programs will continue to provide funding for freight sector capital expenses. Some of the larger ones include:

- Federal Highway Administration (FHWA) programs such as the National Highway Performance Program (NHPP), the Surface Transportation Program (STP), and the Highway Safety Improvement Program (HSIP).
- Transportation Investment Generating Economic Recovery (TIGER) Grants.
- The Congestion Mitigation and Air Quality Improvement Program (CMAQ).

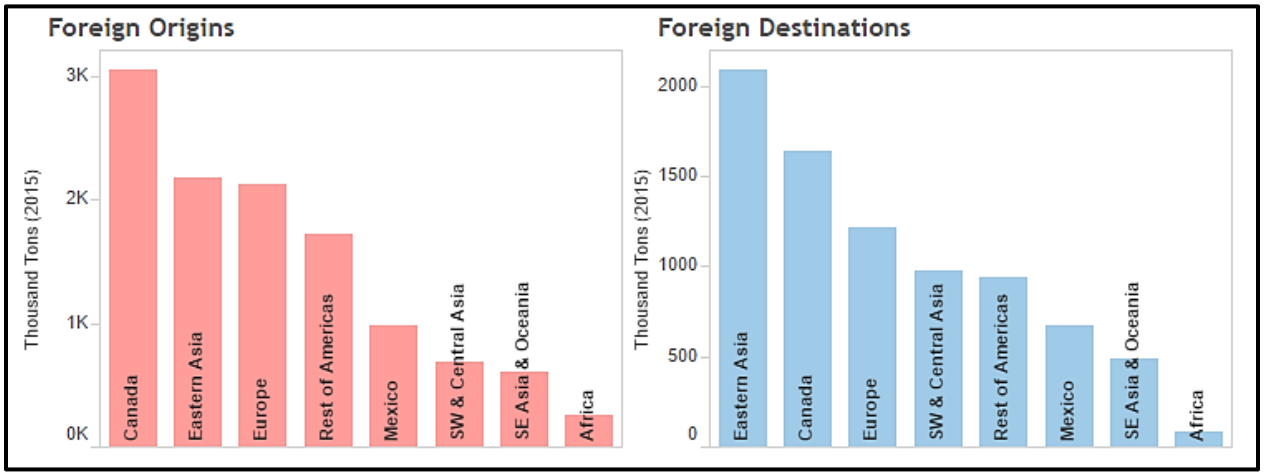
Today, the nation's freight industry is at the center of a revolution, driven not by the emergence of a new mode of transport, but by the adoption of computers, electronic sensors, and automated vehicles; bringing with it a whole new set of opportunities and challenges.

Freight in North Carolina: State Trends

Abrupt innovations in information and communication technologies have radically altered the way Americans' lives function. These innovations affect all aspects of our society, from the way we communicate, receive our news, to how we attain goods and services. The federal government's 2016 report, "Beyond Traffic 2045," details recent changes in the movement of domestic and international freight. According to the report, increases in freight demand will occur across every mode in the U.S., with highway freight (truck) predicted to expand by 44% by 2045, and air freight to increase a staggering 234% across the same period.

The recent widening and deepening of the Panama Canal will enable larger ocean-going vessels, known as "post-Panamax" ships, to pass through the canal. The widening will increase container ship freight volume on gulf and east coast ports, including the Port of Wilmington, North Carolina's busiest and one of the state's essential intermodal connectors. The widening will proportionately result in increased vessel freight from Asia, where a large portion of the state's freight originated and is destined.

Figure 12-1. North Carolina Top Freight Origins and Destinations.



Total tonnage and the number of freight shipments within North Carolina are increasing steadily as demand for consumer goods and other products grows, and as manufacturers and retailers, in following national and global trends, move from inventory based to just-in-time supply chain and distribution systems. Freight transportation demand is typically measured in tons, and value (dollars) of goods moved by the freight sector. Freight tonnage data and the dollar value of freight in North Carolina are listed in Table 12-1 below.

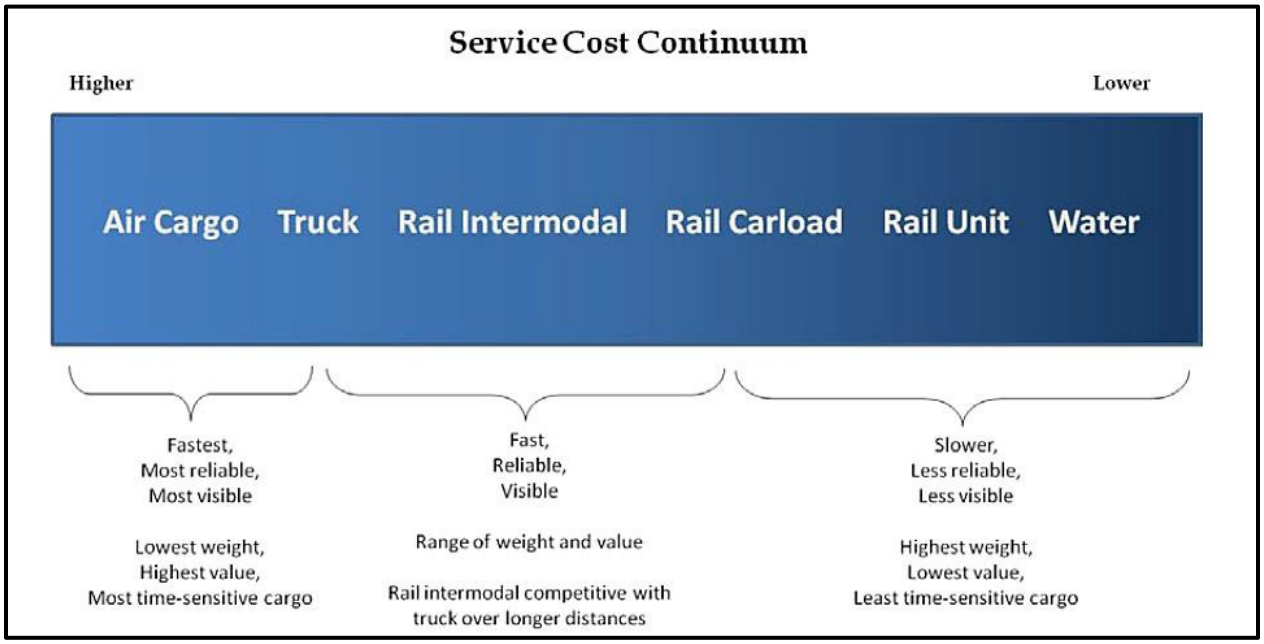
Table 12-1.

North Carolina Freight Tonnage and Value 2015-2045		
Thousand Tons 2015	**Thousand Tons 2045**	**% Change**
240,004	376,776	51%
Value USD (Millions) 2015	**Value USD (Millions) 2045**	--
518,552	1,009,787	64%

Source: North Carolina Freight Flow Tool, Cambridge Systematics, 2018.

North Carolina's freight shippers try to use each mode to their best advantage in selecting freight transportation services to support their supply chains and distribution networks. One way to visualize these advantages and disadvantages is as a spectrum of freight transportation services. On one end of the spectrum is water transportation, which tends to be the lowest cost carrier, but also provides the slowest service and is not universally available, as is truck service. At the other end of the spectrum is air freight service, which offers fast and reliable shipment, but at much higher prices. Between these extremes are truck, intermodal, and rail services. As a general rule of thumb, higher-value, lower-weight, and more time sensitive freight is shipped by truck and air, while lower-value, heavier weight, and less time-sensitive freight moves by rail and water.

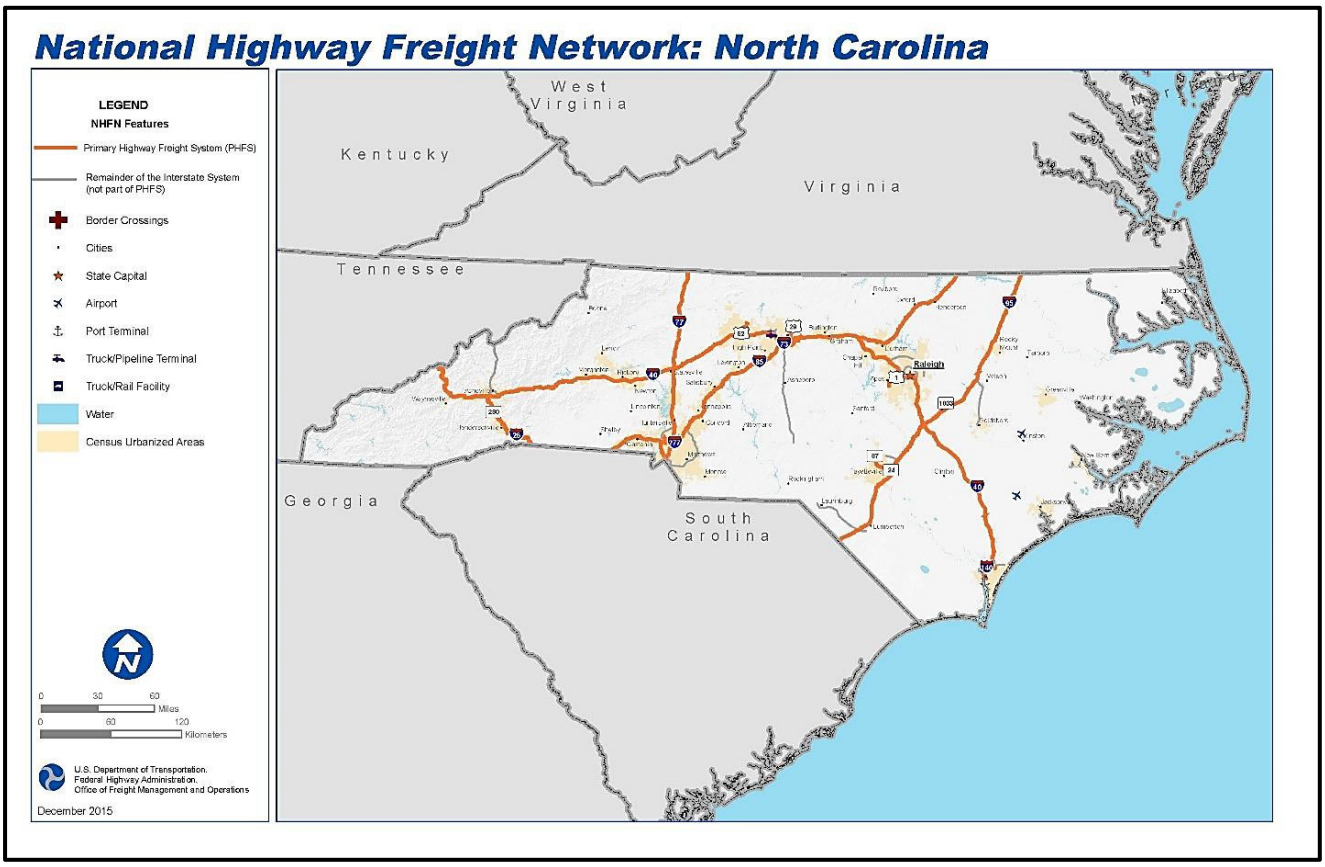
Figure 12-2. Service Cost



Many factors are evaluated by freight shippers when considering freight transportation options. Price, capacity, transit speed, and equipment availability are among the most obvious and important considerations for shippers. Reliability, or the degree of certainty and predictability in travel times on a system, is also a critical factor, particularly for just-in-time logistics processes, which rely on timely and predictable shipments to reduce inventory costs. Additionally, the characteristics of the commodities being shipped, as some commodities—due to size, weight, perishability, or other factors—are more cost-effectively transported by one specific mode.

In addition to the factors discussed above, there are a number of emerging trends and issues that are beginning to influence both freight demand and mode choice decisions, including but not limited to: fluctuating fuel prices, current trends in environmental conservation, new railroad operational strategies, improved energy efficiency, changes to the world's socio-economic landscape, as well as advances in online commerce.

Figure 12-3. National Highway Freight



GHMPO Freight Infrastructure

Roads & Highways

Highway freight is the anchor of goods movement in the region, and accounts for the vast majority of freight movement. Interstate 40, which runs east/west through the Hickory GHMPO for approximately 47 miles through Burke and Catawba counties, is the only major thoroughfare in the planning area currently designated as part of the National Highway Freight Network (NHFN). Because of the corridor's close proximity to several major principal connectors, this section of I-40 frequently experiences congestion during peak hours, most noticeably in Catawba County. Although not part of the NHFN, US-321 carries large amounts of north-south traffic through the region, including significant truck traffic.

The roadways in the Greater Hickory MPO area are currently able to support truck freight transportation. This is the mode used by most commercial facilities to move goods into and out of our region. Interstate 40 is a major truck route passing through Catawba and Burke Counties and the main east-west transportation corridor used by trucks and passenger vehicles. US Highway 321 is the region's major north-south corridor and is the primary truck route into Caldwell County. Interstate 40 and US 321 intersect in southwest Hickory. North of this interchange, US 321 is a four-lane highway with numerous traffic lights, intersections and driveways. South of the interchange, US 321 is a limited-access freeway to Gastonia and Interstate 85.

US Highway 70 parallels Interstate 40 through most of the GHMPO. During road construction or traffic accidents on Interstate 40, US 70 serves as an alternate route. This is also "Main Street" for several of the region's local municipalities. NC Highway 127 runs north/south through the City of Hickory, connecting US 64/NC 90 and NC 10 and providing access to Interstate 40 and US 321.

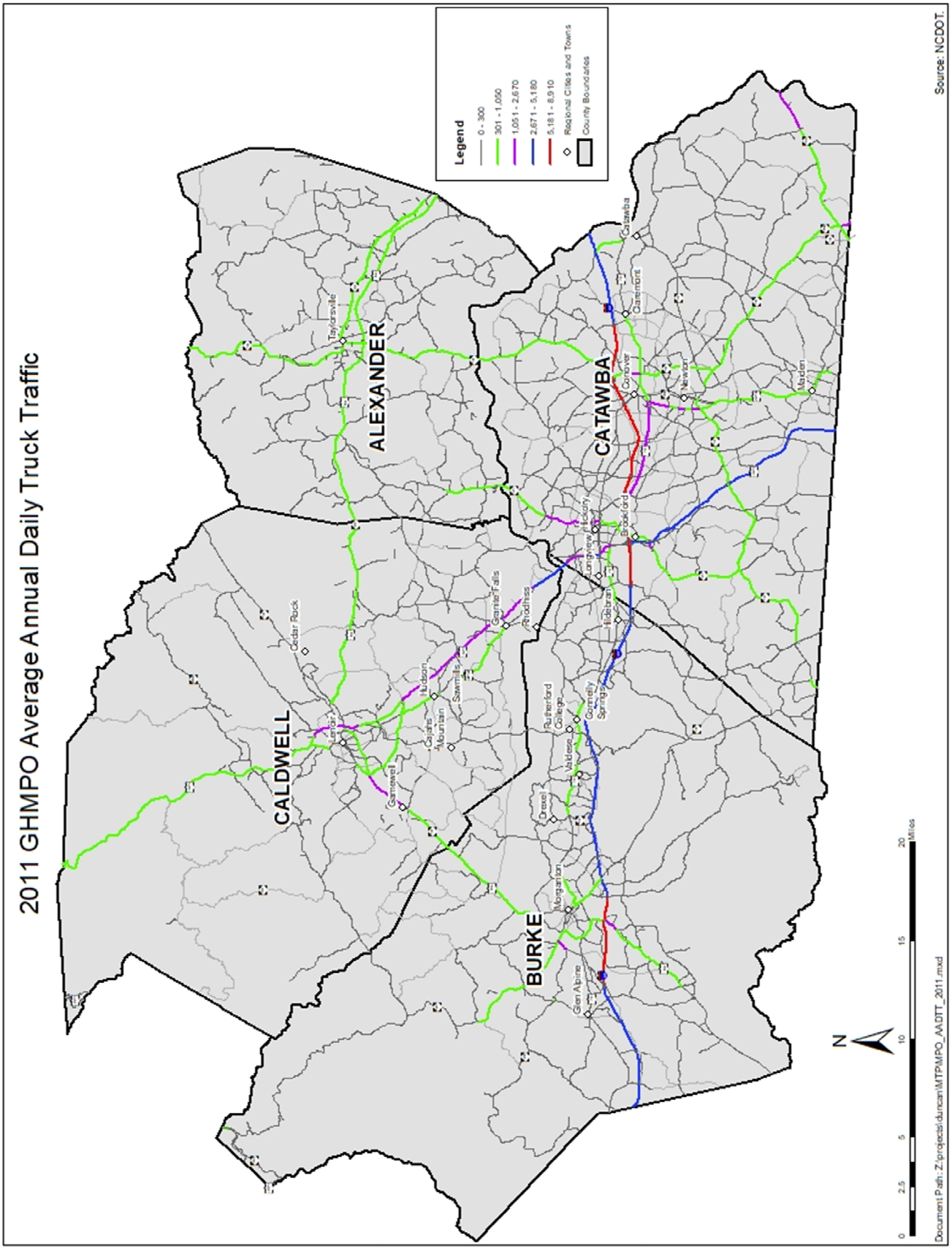
NC 16 travels north-south through central Catawba County, including the cities of Conover and Newton with an interchange at I-40. An 8-mile section of NC 16 south of Newton is being widened to 4 lanes, which will complete the multilane project linking Charlotte and I-85 with I-40 in Catawba County. This is a major route into Alexander County and Taylorsville. Another route used by trucks, US 64/NC 18, travels southwest from the City of Lenoir to the City of Morganton. This thoroughfare provides access to Interstate 40.

Other thoroughfares, such as Connelly Springs Road in Caldwell and Burke counties and McDonald Parkway in Catawba County, are often used by trucks to avoid high traffic volumes, but the major truck routes are I-40, US 321 and the NC Highways listed above.

Map 12-1 below shows Average Annual Daily Truck Traffic (AADTT) on the GHMPO's major truck routes in 2011. The highest truck traffic occurs on I-40 in Catawba and Burke counties, and US 321 in Catawba and Caldwell counties. Map 12-2 also shows AADTT, but for 2016. Truck traffic continues to be heaviest in central Catawba County on I-40, with slight reductions in truck traffic in Burke County near Morganton. Truck traffic also declined on US 321 in Caldwell County near Catawba County. The recently completed section of NC 16 also shows an increase in truck traffic in 2016. Map 12-3 breaks down individual route segments using NCDOT truck count station data from 2011 to 2016:

- In Alexander County AADTT remained unchanged.
- In Burke County, AADTT increased on segments of NC 18, US 70 Bypass, US 64, and NC 181; AADT on I-40 decreased near Morganton.
- In Caldwell County AADTT increased on Southwest Blvd., and declined on US 321 north of NC 18 and near the Catawba County line.
- In Catawba County, AADTT decreased on I-40 in the western section of the County, US 321 near 2nd Ave., NC 127 near Hickory, NC 16 Business. Truck traffic increased on US 321 Business and NC 16.

Map 12-1.


2011 GHMPO Average Annual Daily Truck Traffic
Legend
0 - 300
301 - 1,050
1,051 - 2,670
2,671 - 5,180
5,181 - 8,910
Regional Cities and Towns
County Boundaries
ALEXANDER
CALDWELL
BURKE
CATAWBA
Taylorsville
Cedar Rock
Lenoir
Gamewell
Hudson
Cajahs Mountain
Sawmills
Granite Falls
Rhodhiss
Drexel
Morganton
Glen Alpine
Valdese
Rutherford College
Connelly Springs
Hildebran
Longview
Hickory
Brookford
Conover
Claremont
Catawba
Newton
Maiden
N
0
2.5
5
10
15
20
Miles
Source: NCDOT.
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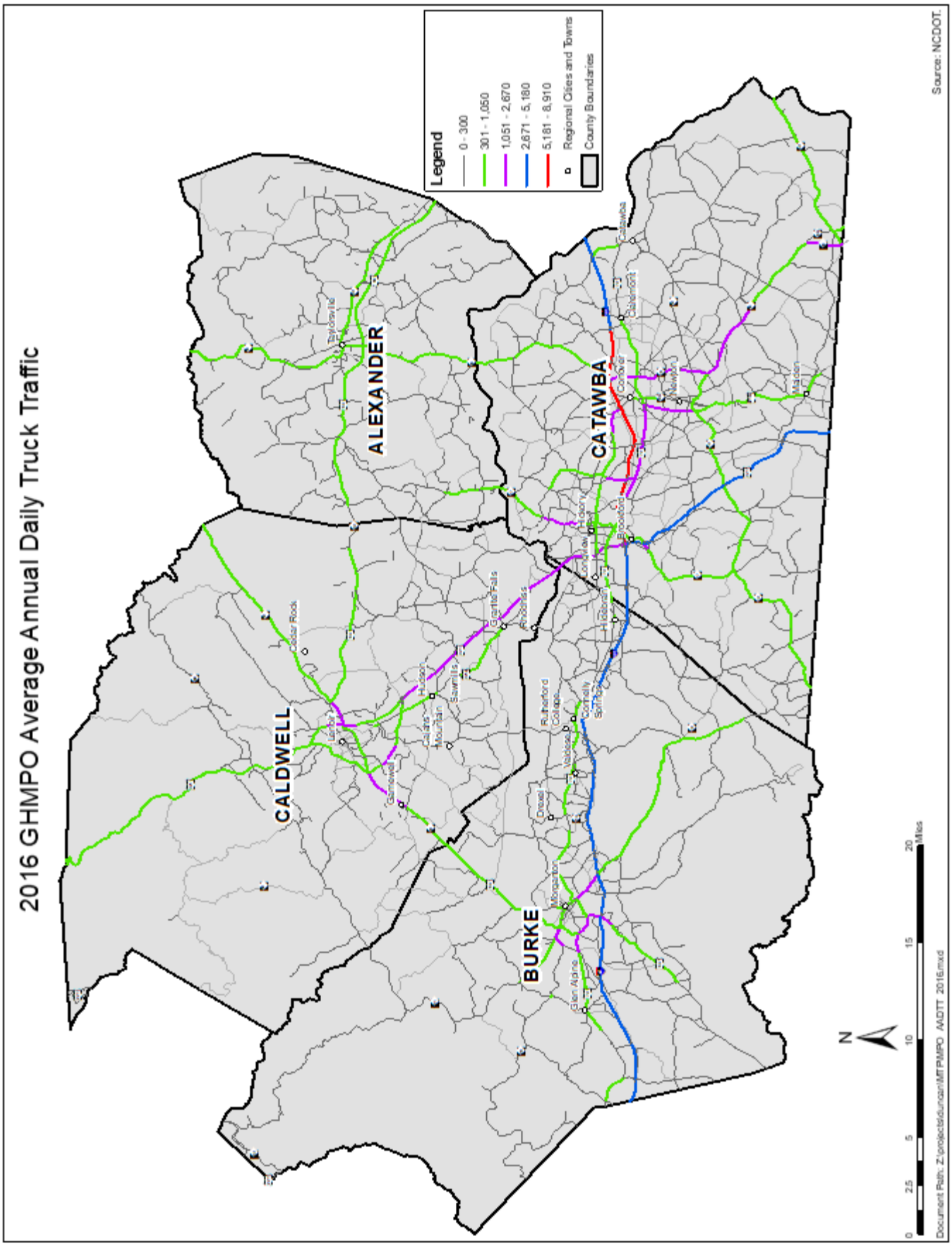
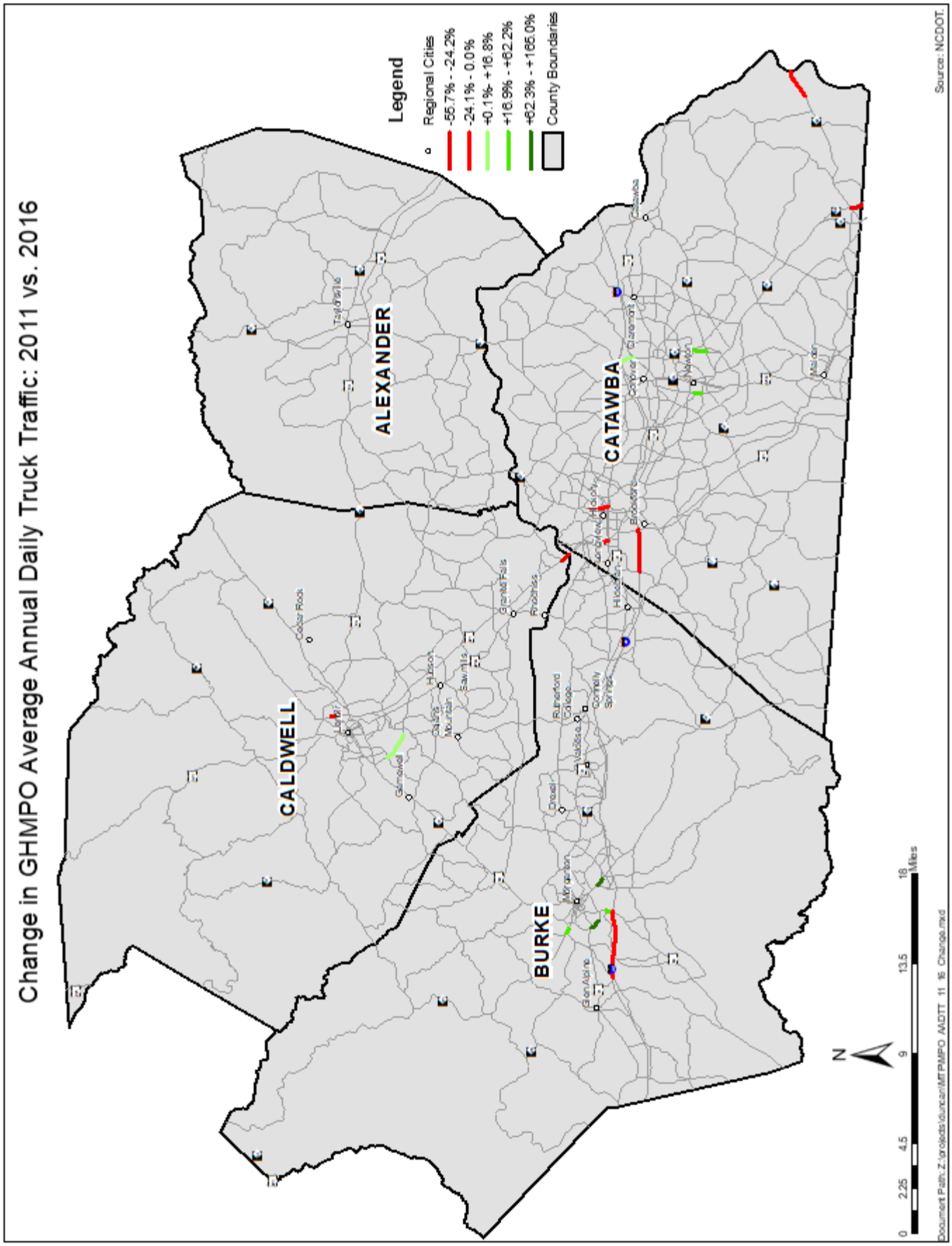
Map 12-2.


2016 GHMPO Average Annual Daily Truck Traffic
Legend
0 - 300
301 - 1,050
1,051 - 2,670
2,671 - 5,180
5,181 - 8,910
Regional Cities and Towns
County Boundaries
ALEXANDER
CALDWELL
CATAWBA
BURKE
Source: NCDOT
N
0
2.5
5
10
15
20
Miles

Map 12-3.


Change in GHMPO Average Annual Daily Truck Traffic: 2011 vs. 2016
Legend
Regional Cities
-85.7% - -24.2%
-24.1% - 0.0%
+0.1% - +16.8%
+16.9% - +62.2%
+62.3% - +185.0%
County Boundaries
ALEXANDER
CALDWELL
BURKE
CATAWBA
Taylorsville
Lenoir
Gamewell
Hudson
Sawmills
Granite Falls
Rhodhiss
Valdese
Drexel
Morganton
Glen Alpine
Rutherford College
Connelly Springs
Hickory
Conover
Claremont
Newton
Catawba
Maiden
Source: NCDOT.
N
0
2.25
4.5
9
13.5
18
Miles
Document Path: Z:\groleds\duncan\MTP\MPO AADTT 11 16 Change.mxd

GHMPO Truck Parking

Increases in AADTT have implications for traffic congestion, emissions, road maintenance and truck parking needs. According to the North Carolina Department of Transportation (NCDOT), truck parking has become an increasingly serious concern for truck drivers, motor carriers, truck facility operators and public officials throughout the United States.

A recent report, "Critical Issues in the Trucking Industry" (ATRI, 2016), stated that the lack of truck parking is the third highest-ranked concern among truck drivers. Adequate truck parking located in the right locations will help to make conditions safer for truck drivers and other travelers, reduce unnecessary fuel consumption, and improve the efficiency of commercial vehicle operations.

The recently completed truck stop facility on US 321 has added a significant number of truck parking spaces, along with other amenities. Results of a recent truck parking inventory are included in Table 12-2, below.

Table 12-2. GHMPO Truck Parking Inventory.

GHMPO Truck Parking Inventory							
Facility Name	**Overnight Parking**	**Diesel**	**Food**	**Parking Spaces**	**Showers**	**Highway Corridors**	**County**
Country Market	---	Yes	Yes	35	---	US 321	Catawba
Love's Travel Stop	Yes	Yes	Yes	104	Yes	US 321 I-40	Catawba
Wal-Mart Supercenter	---	---	---	---	---	I-40	Catawba
Pilot Travel Center	Yes	Yes	Yes	62	Yes	I-40	Catawba
Rest Area: Catawba County East Bound	---	---	---	15	---	I-40	Catawba
Rest Area: Catawba County West Bound	---	---	---	14	---	I-40	Catawba

Sources: The truck stops, 2018.

GHMPO Bottlenecks

Improvements in data analytics has helped identify traffic bottlenecks in the GHMPO. Using data from mobile apps and sources like Google Maps, it is possible to identify and rank bottlenecks based on their location, average maximum length in miles, average daily duration, total duration for a specified time period (hour, day, month, and year), and estimated volume. Table 12-3 shows the region's top 25 bottlenecks in 2016. Identifying these locations is important for understanding freight traffic in the GHMPO, given that most of these bottlenecks are also heavily used by trucks.

Table 12-3. Top 25 GHMPO Bottleneck Locations: Calendar Year 2016.

Top 25 GHMPO Bottleneck Locations: Calendar Year 2016	
Rank	**Head Location (approximate)**
1	US-70 E @ SR-1476/FAIRGROVE CHURCH RD
2	US-70 W @ LENOIR RHYNE BLVD/8TH STREET DR
3	US-64 E @ NC-18/GREEN ST/STERLING ST
4	US-64 W @ US-70 BUS/W UNION ST
5	US-321 N @ 2ND AVE
6	US-64 W @ US-70/US-64 BUS/W FLEMING DR
7	US-70 W @ US-321 BUS
8	US-64 W @ I-40 (MORGANTON)
9	US-64 E @ US-64 BUS/KIRKSEY DR/SANFORD DR
10	NC-90 W @ SR-1110/LILEDOUN RD
11	NC-90 E @ NC-16/3RD ST
12	US-321 S @ 2ND AVE
13	NC-18 S @ I-40/BUSH DR
14	NC-16 N @ NC-90/W MAIN AVE
15	US-70 W @ US-64 BUS/BURKEMONT AVE
16	NC-10 E @ SR-1003/MURRAYS MILL RD
17	US-64 E @ US-321/BLOWING ROCK BLVD
18	US-70 E @ US-70/E UNION ST
19	NC-18 N @ US-70/FLEMING DR
20	US-70 E @ NC-127/S CENTER ST
21	US-64 E @ US-70/US-64 BUS/W FLEMING DR
22	US-70 E @ LENOIR RHYNE BLVD/8TH STREET DR
23	US-70 E @ NC-18/S STERLING ST
24	NC-18 N @ US-70 BUS/US-64 BUS/MEETING ST/UNION ST
25	NC-10 W @ US-321 BUS/WEST E ST

Source: Probe Data Analytics Suite; RITIS, 2018.

GHMPO Rail Freight/Intermodal Freight

There are currently two Class I Railroads operating in the GHMPO region: CSX Transportation (CSXT) and Norfolk Southern Railway. Statewide, these two railway freight companies constitute approximately 70 percent of North Carolina's total rail system. Short lines and switching companies operate the remainder of the system.

Figure 12-4. North Carolina Railroads.

The 139-mile Norfolk Southern line runs from Salisbury to Asheville. In Salisbury, this line intersects with the corridor that connects Charlotte to Morehead City. Coal is the principal online commodity on this medium traffic railway. There is no passenger service on the line at this time. Several local governments have formed the Western NC Passenger Rail Task Force to lobby for passenger service on the railway. Improvements and upgrades would have to be made for the GHMPO Norfolk Southern rail line to accommodate passenger trains. These improvements would also allow for a greater capacity of freight trains.

Table 12-4. GHMPO Freight Rail Service.

GHMPO Freight Rail Service				
Railroad		**Miles Operated in North Carolina**		**GHMPO County**
CSX Transportation		1,138		Catawba
Norfolk Southern Corp.		1,450		Caldwell, Catawba, Burke
Alexander Railroad		19		Alexander
Caldwell County Railroad Co.		18		Caldwell

Source: U.S. Department of Transportation, Bureau of Transportation Statistics, 2018, the railroads.

The Caldwell Railroad Commission owns an 18-mile rail line that connects the Norfolk Southern line in Hickory to the City of Lenoir. Caldwell County bought this line in the early 1990s when Norfolk-Southern wanted to discontinue the line's use. This short line is managed by the Caldwell County Railroad Company. It helps to support the freight operations of several industries in the county. Current railroad users include:

- Boone Lumber

- New River Building Supply
- ShurTape
- Pregis
- Sealed Air

In 2007, Caldwell County and the City of Lenoir constructed a trans-load facility - which moves freight off trains and onto trucks for delivery – on the rail line south of the current Google property. The trans-load facility contains three sets of tracks with lifts and room to transfer freight to trucks.

Caldwell County's Economic Development Commission is actively working to encourage businesses and industries to use the trans-load facility to its fullest potential. They are evaluating potential expansion of the facility and incorporating it into business retention and recruiting efforts. When expanded, the facility will grow into a major asset for Caldwell County and the entire GHMPO region. The Caldwell Railroad Commission is dedicated to increasing the use of rail to move freight since it will have a positive impact on highway safety and air quality by reducing the number of trucks needed to move freight in the area.

Caldwell County Railroad

The Alexander Railroad also serves the GHMPO. It connects Taylorsville to the Norfolk-Southern rail line in Statesville and is important to the economic development of Alexander County. Paragon Films is the railroad's largest customer in Taylorsville. Liberty Reload, a distribution center in the Alexander Industrial Park, also is a major user of the railroad. The Alexander Railroad and Alexander County Economic Development Commission recently completed the construction of a new 50,000 square foot shell building, which will be occupied by Borealis Compounds Inc., a provider of plastic pellets used in the automotive industry.

Rail service is also provided to the Claremont International Business Park by Norfolk Southern. The presence of rail service there has increased the freight shipping options available to tenants and greatly enhances the Parks' development potential.

Norfolk Southern and CSX both operate intermodal terminals in the vicinity of the GHMPO. Norfolk Southern operates a terminal at the Charlotte-Douglas International Airport and in Greensboro. CSX has an intermodal terminal in Charlotte.

Intermodal (also known as multimodal) transportation is the notion of transporting freight by means of a system of interconnected networks, utilizing several combinations of transportation modes that function together. By combining transportation modes into one transport system, transportation costs and transit times are reduced. By reducing freight handling time, labor costs, and packing costs, intermodal transportation has facilitated economies of scale and lead to improvements in throughput, particularly for valuable non-bulk commodities.

Table 12-5. Intermodal Terminals.

Intermodal Terminals				
Owner/Operator		**Type**		**Location**
Norfolk Southern/City of Charlotte		Truck/Rail		Charlotte-Douglas International Airport
CSX		Truck/Rail		Charlotte
Norfolk Southern		Truck/Rail		Greensboro

Source: The railroads; Charlotte-Douglas International Airport, 2018.

The transportation planning environment is evolving due to the development of new technologies and the demand for improved mobility by freight providers. New transportation priorities are emerging in the face of these factors, which emphasize efficiency, connectivity and modal choice. The underlying goal of intermodal freight transportation is to coordinate the network of transportation systems and enhance the mobility of goods by efficiently using existing resources. Multimodal transportation systems focus on transportation system links and providing system users with a choice of modes along those links.

Intermodal Facility at Charlotte-Douglas International Airport.

Photo via Charlotte-Douglas International Airport.

The Greater Hickory MPO is dedicated to promoting an integrated and connected, multimodal goods movement system that supports freight mobility and access across the Western Piedmont. The process for developing such plans and programs shall provide for the consideration of all modes of transportation, and shall be cooperative and comprehensive to the degree appropriate based on the complexity of transportation challenges, and available resources.

GHMPO Air Freight

Two airports in the GHMPO region have the capacity to process air freight: Foothills Regional Airport in Caldwell County and Hickory Regional Airport in Hickory. Hickory Regional Airport is the larger of the 2 airports, with a control tower, and 2 runways. Table 12-6 below summaries the operational capabilities of airports in the region.

Table 12-6. GHMPO Airport Facilities.

GHMPO Airport Facilities							
Airport	Location	Use	Governance	Runway Dimensions	Based Aircraft	Aircraft Operations	Control Tower
Foothills Regional Airport	Caldwell Co.	Public	Airport Authority	5,500 x 75 ft.	70	47/day	No
Hickory Regional Airport	Hickory	Public	City	6,400 x 150 ft; 4,400 x 150 ft.	84	180/day	Yes
Little Mountain Airport	Maiden	Private	Private	3,000 x 40 ft.	3	40/week	No

Source: airnav.com, 2018.

Located immediately adjacent to US 321 and less than four miles from the interchange of US 321 and Interstate 40, the Hickory Regional Airport is owned and operated by the City of Hickory. Air freight in the Hickory Metro area has declined in the past several years. There was a decrease of air freight in 2000 when the Hickory area experienced significant losses of the manufacturing industry.

In 2006, commercial passenger service ceased at the Hickory Regional Airport, resulting in the cessation of freight shipments that were historically transported in the cargo holds of passenger aircraft. Currently, a small amount of freight comes through the Hickory Regional Airport, typically on chartered freight aircraft. The airport is well-positioned to contribute to the GHMPO's air freight operations, because of the potential to develop warehouse facilities on the airport's property and on land adjacent to the airport.

While Hickory can accommodate aircraft such as Boeing 737s, Airbus A-318/319/320s and other aircraft of similar size, prior landing permission is required. At 6,400 feet in length, the airport's main runway is capable of accommodating these aircraft (depending on the weight of each aircraft and its cargo). However, regularly scheduled operations of these heavier aircraft would damage the runway and taxiway system.

In 2000, local officials applied for the expansion of Foreign Trade Zone #57, headquartered in Charlotte (grantee is the Charlotte Regional Partnership), into the Western Piedmont region. Having regional foreign trade zones allows local businesses to reduce tariffs on international imports or exports. After a minor boundary modification using acreage from the Hickory Regional Airport/Lakepark site, the region's first foreign trade zone site was activated and is currently operated by a "general purpose" user, Consolidation Services. Consolidation Services continues to use the FTZ for storing and shipping freight.

Foothills Regional Airport's close proximity to both Lenoir and Morganton give it unique advantages for the provision of air freight service. Like the Hickory Regional Airport, Foothills Regional Airport can accommodate larger aircraft – depending on each aircraft's maximum landing weight. The airport is governed by the Foothills Regional Airport Authority. The Authority is comprised of elected officials from the cities of Morganton and Lenoir, and the counties of Burke and Caldwell. The cities of Morganton and Lenoir and the counties of Burke and Caldwell help fund the airport.

Little Mountain Airport is a private facility located near Maiden. It serves as the headquarters for Mountain Air Cargo (a subsidiary of AirT), a regional freight carrier that provides service in the eastern US and the Caribbean. Mountain Air Cargo aircraft do not operate freight services at the airport.

Air freight is routinely transported in the cargo holds of commercial aircraft. Nearby commercial service airports include Charlotte-Douglas, Greensboro (Piedmont-Triad) and Raleigh-Durham international airports. In 2015, Charlotte-Douglas had 21,913,166 passenger enplanements, followed by Raleigh-Durham (4,954,735)) and Piedmont-Triad (848,249).

GHMPO Drivers of Freight

Freight flows in the region are driven primarily by the region's significant manufacturing base. Other key drivers include retail trade, wholesale trade, distribution and the transportation and warehousing industries. Approximately 40,000 people in the GHMPO are employed in the manufacturing sector, while approximately 5,000 are employed in the wholesale trade sector.

Table 12-7. GHMPO Top 10 Employment Sectors by Number of Employees.

GHMPO Top 10 Employment Sectors by Number of Employees	
Sector	**Number of Employees**
Manufacturing	39,931
Health Care and Social Assistance	21,575
Retail Trade	16,462
Accommodation and Food Services	11,606
Educational Services	9,620
Administrative and Waste Services	9,006
Public Administration	8,256
Wholesale Trade	6,998
Transportation and Warehousing	3,835
Construction	3,533

Source: North Carolina Freight Flow Tool, Cambridge Systematics, 2018.

GHMPO Freight Generators

There are over 100 major freight generating facilities in the region. Although these entities are engaged in a variety of business activities, manufacturing is the primary sector contributing to regional freight flows.

Table 12-8. GHMPO Major Freight Generating Facilities.

GHMPO Major Freight Generating Facilities ***(Facilities Larger Than 100,000 Sq. Ft.)***		
Company Name	**Location**	**Primary Business**
CommScope	Catawba	Manufacturing
Shurtape	Catawba	Wholesale/Distribution
CertainTeed	Claremont	Manufacturing
Centro	Claremont	Manufacturing
CommScope	Claremont	Manufacturing
Draka/Prysmian	Claremont	Manufacturing
Advance Pierre	Claremont	Manufacturing
Poppelmann Plastics	Claremont	Manufacturing
Rock-Tenn	Claremont	Manufacturing

Company Name	Location	Primary Business
Williams-Sonoma	Claremont	Manufacturing/Distribution
Armacell	Conover	Manufacturing
Zenith Global Logistics	Conover	Wholesale/Distribution
Carpenter Company	Conover	Manufacturing
Classic Leather	Conover	Manufacturing
Hanes Industries	Conover	Manufacturing
Hickory Printing Solutions	Conover	Manufacturing/HQ
Hickory Springs	Conover	Manufacturing
IdeaItalia	Conover	Manufacturing/Distribution
Interstate Foam	Conover	Manufacturing
Kroehler Furniture	Conover	Manufacturing
LaneVenture	Conover	Manufacturing
Leathercraft	Conover	Manufacturing
Lee Industries	Conover	Manufacturing/HQ
McCreary Modern	Conover	Manufacturing
Rock-Tenn	Conover	Manufacturing
Southern Furniture	Conover	Manufacturing
Vanguard Furniture	Conover	Manufacturing
Wesley Hall Furniture	Conover	Manufacturing
Baker Furniture	Hickory	Wholesale/Distribution
Carolina Container	Longview	Manufacturing
Catawba Sox	Hickory	Manufacturing
Century Furniture	Hickory	Manufacturing
Consolidation Services	Hickory	Wholesale/Distribution
Corning Cable Systems	Hickory	Manufacturing
CR Laine Furniture	Hickory	Manufacturing
Fed-Ex Ground	Hickory	Distribution
Fill-Pac	Hickory	Wholesale/Distribution
HBF	Hickory	Manufacturing
Hickory Chair	Hickory	Manufacturing
Klingspor Abrasives	Hickory	Manufacturing
Sherrill Furniture	Hickory	Manufacturing
Sunbelt Furniture Express	Hickory	Distribution
IFH	Hickory	Wholesale/Distribution
MDI	Hickory	Wholesale/Distribution
Plastic Packaging	Hickory	Manufacturing
Profile Products	Hickory	Wholesale/Distribution
Robert Abbey	Hickory	Manufacturing
Shurtape	Hickory	Manufacturing
Snyder Paper	Hickory	Distribution
Tailored Chemical	Hickory	Manufacturing
Turbotec Products	Hickory	Manufacturing/HQ
Carolina Container	Maiden	Manufacturing
Ethan Allen	Maiden	Manufacturing
Excel Commercial Seating	Maiden	Manufacturing
GKN Driveline	Maiden	Manufacturing
Lawrence Lumber Co.	Maiden	Wholesale/Distribution
von Drehle Corp.	Maiden	Wholesale/Distribution
Bassett Furniture	Newton	Manufacturing
Flowers Baking Co.	Newton	Manufacturing
General Dynamics	Newton	Manufacturing
Goldtoe Moretz	Newton	Wholesale/Distribution
HT Hackney	Newton	Wholesale/Distribution
Lee Industries	Newton	Manufacturing

Company Name	Location	Primary Business
McCreary Modern	Newton	Manufacturing
Sarstedt	Newton	Manufacturing
Special Metals	Newton	Manufacturing
Technibilt	Newton	Manufacturing
International Paper	Newton	Manufacturing
Tufco Technologies	Newton	Manufacturing
ZF Lemforder	Newton	Manufacturing
Target Corporation	Newton	Wholesale/Distribution
Renwood Mills	Newton	Wholesale/Distribution
Century Furniture	Longview	Manufacturing
E. J. Victor Furniture	Morganton	Wholesale/Distribution
Adden Furniture	Hildebran	Wholesale/Distribution
SGL Carbon	Morganton	Manufacturing
MFG	Morganton	Manufacturing
Meritor	Morganton	Manufacturing
Viscotec	Morganton	Manufacturing
Leviton	Morganton	Manufacturing
PCA	Morganton	Manufacturing
Case Farms	Morganton	Manufacturing
American Roller Bearing	Morganton	Manufacturing
Baker Furniture	Burke County	Manufacturing
Continental	Morganton	Manufacturing
Environmental Inks/Siegwerk	Morganton	Manufacturing
Ferguson Copeland	Morganton	Manufacturing
Geiger	Hildebran	Manufacturing
Gerresheimer Glass	Morganton	Manufacturing
Ice River Springs	Morganton	Manufacturing
SAFT	Valdese	Manufacturing
Valdese Weavers	Valdese	Manufacturing
Robinson Lumber	Lenoir	Manufacturing
Company Name	Location	Primary Business
Construction Attachments	Lenoir	Manufacturing
Bemis	Lenoir	Manufacturing
UPS	Lenoir	Distribution
Thomasville Furniture	Lenoir	Manufacturing
Bernhardt Furniture	Lenoir	Manufacturing
Broyhill Furniture	Lenoir	Manufacturing
Kincaid Furniture	Hudson	Manufacturing
Blue Ridge Tissue	Lenoir	Manufacturing
Sealed Air	Lenoir	Manufacturing
NEPTCO	Granite Falls	Manufacturing
McGee Crating	Lenoir	Manufacturing
Timberwolf Wood Products	Hudson	Manufacturing
Carolina Base-Pac	Hudson	Manufacturing
Google	Lenoir	Data Center
H. Parsons	Lenoir	Manufacturing

Source: GHMPO staff.

GHMPO Top Freight Commodities

In 2015, the region's top 5 freight commodities (by tonnage) consisted mostly of Raw & Finished Wood Materials, Agriculture, Non-Metallic metal and Base Metal Products, Energy Products, Aggregates, Mixed Freight, Waste and Chemicals. Little overall change in major commodity tonnage is projected to occur by 2045.

Table 12-9. Top 5 Commodity Types.

Top 5 Commodity Types: 2015 vs. 2045
Percent of Total Freight Tonnage

Year	Commodity Rank	Alexander	Pct. of Total	Burke	Pct. of Total	Caldwell	Pct. of Total	Catawba	Pct. of Total
2015	1	Raw & Finished Wood Products	32.99	Agriculture	20.38	Raw & Finished Wood Products	27.68	Raw & Finished Wood Products	21.61
	2	Non-metallic metal and Base Metal Products	14.58	Raw & Finished Wood Products	16.45	Energy Products	17.49	Energy Products	20.08
	3	Energy Products	11.04	Aggregates	14.88	Non-metallic metal and Base Metal Products	16.26	Non-metallic metal and Base Metal Products	12.10
	4	Aggregates	10.54	Non-metallic metal and Base Metal Products	13.12	Aggregates	9.68	Mixed Freight	10.79
	5	Waste	9.19	Food, Alcohol & Tobacco	8.44	Chemicals, Pharma, Plastics, Rubber	8.63	Aggregates	9.31
2045	1	Raw & Finished Wood Products	30.02	Agriculture	20.48	Raw & Finished Wood Products	25.84	Raw & Finished Wood Products	20.77
	2	Non-metallic metal and Base Metal Products	15.16	Raw & Finished Wood Products	13.76	Non-metallic metal and Base Metal Products	17.35	Non-metallic metal and Base Metal Products	14.08
	3	Waste	11.82	Non-metallic metal and Base Metal Products	13.36	Chemicals, Pharma, Plastics, Rubber	12.36	Mixed Freight	13.00
	4	Mixed Freight	9.29	Aggregates	11.55	Energy Products	10.74	Agriculture	10.16
	5	Aggregates	9.02	Chemicals, Pharma, Plastics, Rubber	11.15	Waste	9.82	Energy Products	9.23

Notes:

Includes all freight originating in or destined for the selected county, including intracounty traffic. Rail 2015 rail data from 2014. Aggregates: Stone and sands; other non-metallic minerals; metallic ores and concentrates.
Energy Products: Gasoline, Fuel Oils, other petroleum products
Non-metallic metal and Base Metal Products: Non metallic mineral products; base metal in primary or semi-finished forms and in finished forms.

Source: North Carolina Freight Flow Tool, Cambridge Systematics, 2018.

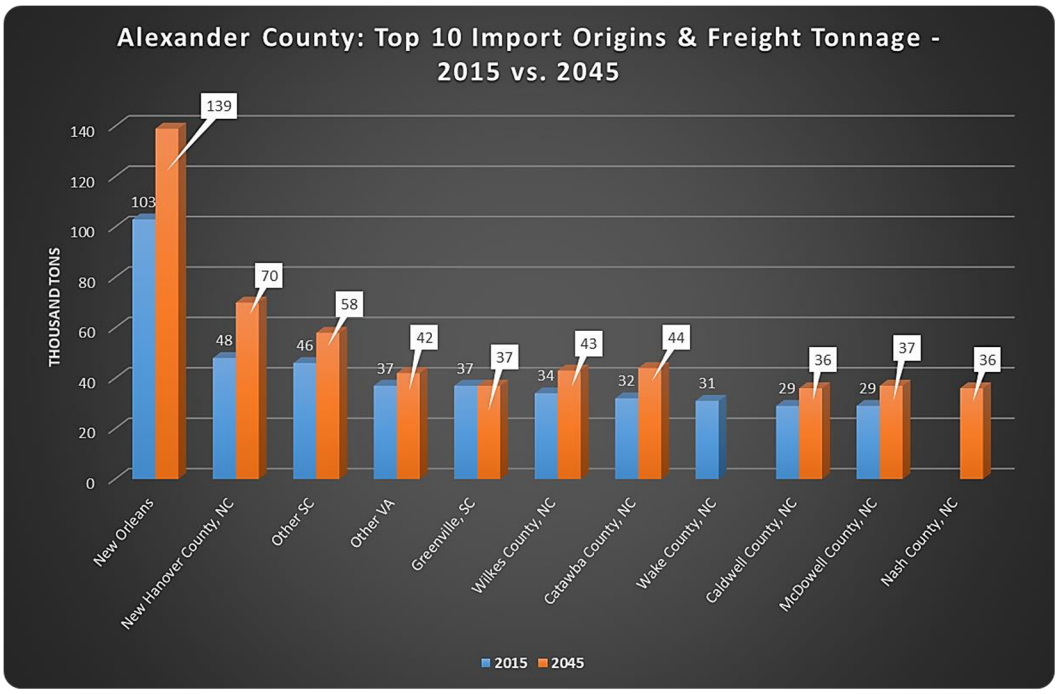
GHMPO Freight Flows

County Freight Profiles & Projections: 2015 vs. 2045

A vast amount of freight originates, is destined for, or traverses the region annually. In order to plan for the region's future freight needs, it is necessary to understand both the importance of freight to the GHMPO's economy and the freight industry's reliance on the region's transportation infrastructure for shipping purposes. Below are each county's 2015 and projected 2045 freight tonnage and top 10 import/export destinations. Total freight tonnage includes all freight traffic originating in or destined for each county.

Alexander County

Charts 12-1 and 12-2.



Most of the region's top 10 import and export markets are located either in North Carolina or within the southeastern US.

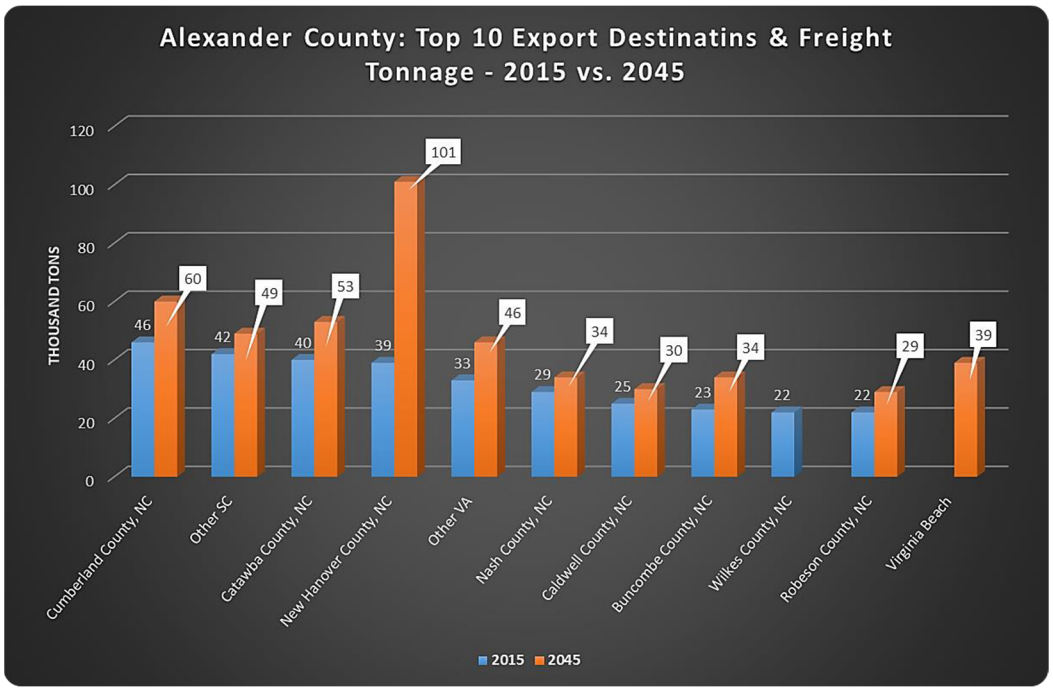
Alexander County

Total Freight Tonnage:

(Thousand Tons)

2015: 2,599

2045: 3,555

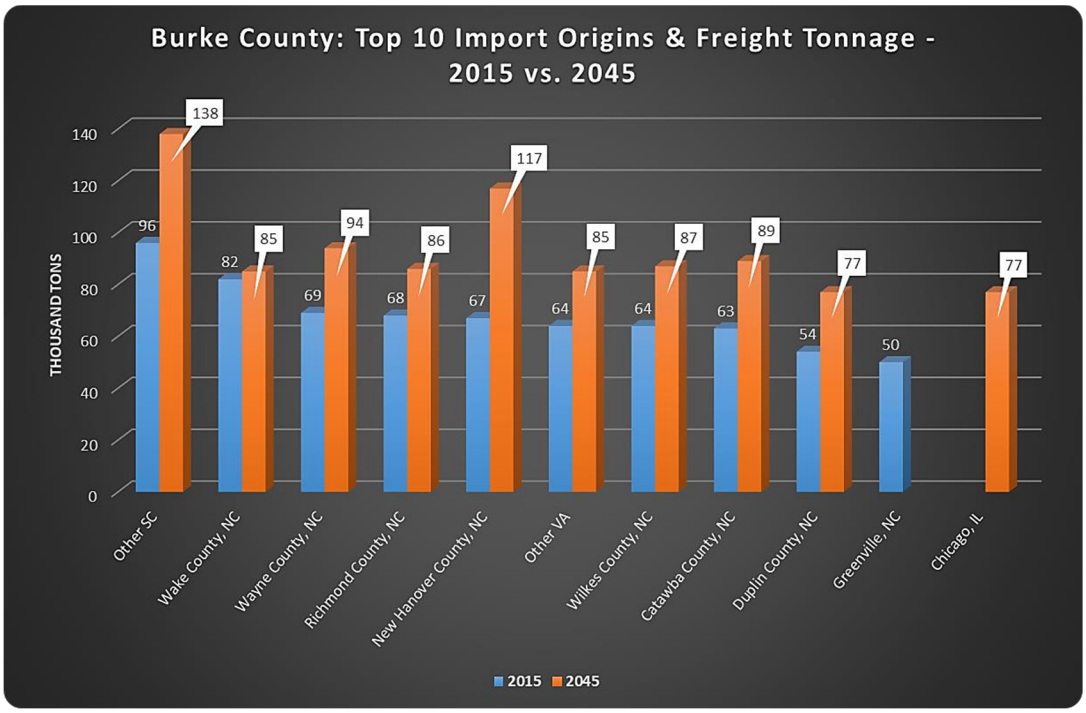


In most cases, each county's top ten import and export destinations are projected to remain the same, though freight tonnage is projected to increase.

Source: North Carolina Freight Flow Tool, Cambridge Systematics, 2018.

Burke County

Charts 12-3 & 12-4.

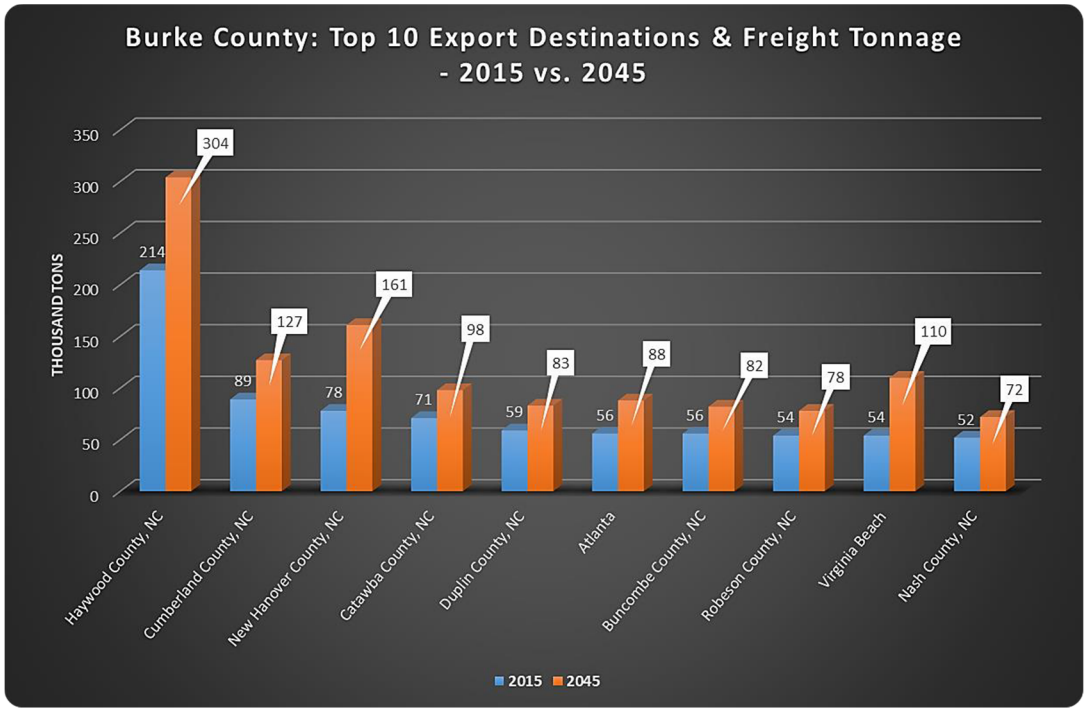


Most of the region's top 10 import and export markets are located either in North Carolina or within the southeastern US.

Burke County Total Freight Tonnage: (Thousand Tons)

2015: 5,248

2045: 7,766

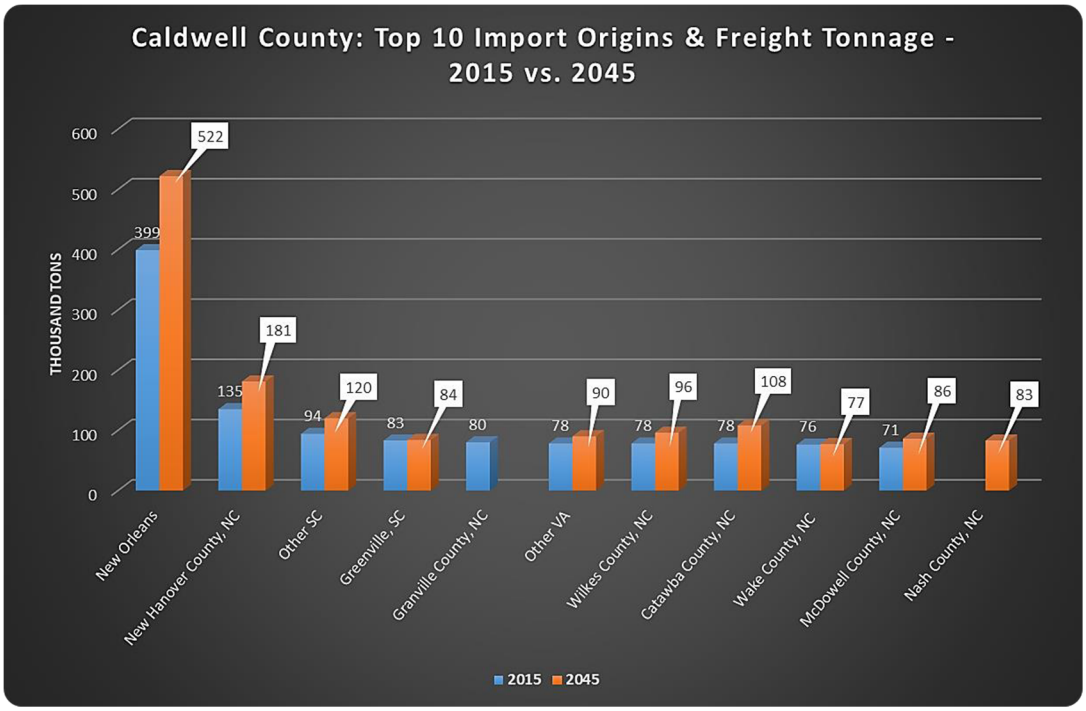


In most cases, each county's top ten import and export destinations are projected to remain the same, though freight tonnage is projected to increase.

Source: North Carolina Freight Flow Tool, Cambridge Systematics, 2018.

Caldwell County:

Charts 12-5 & 12-6.

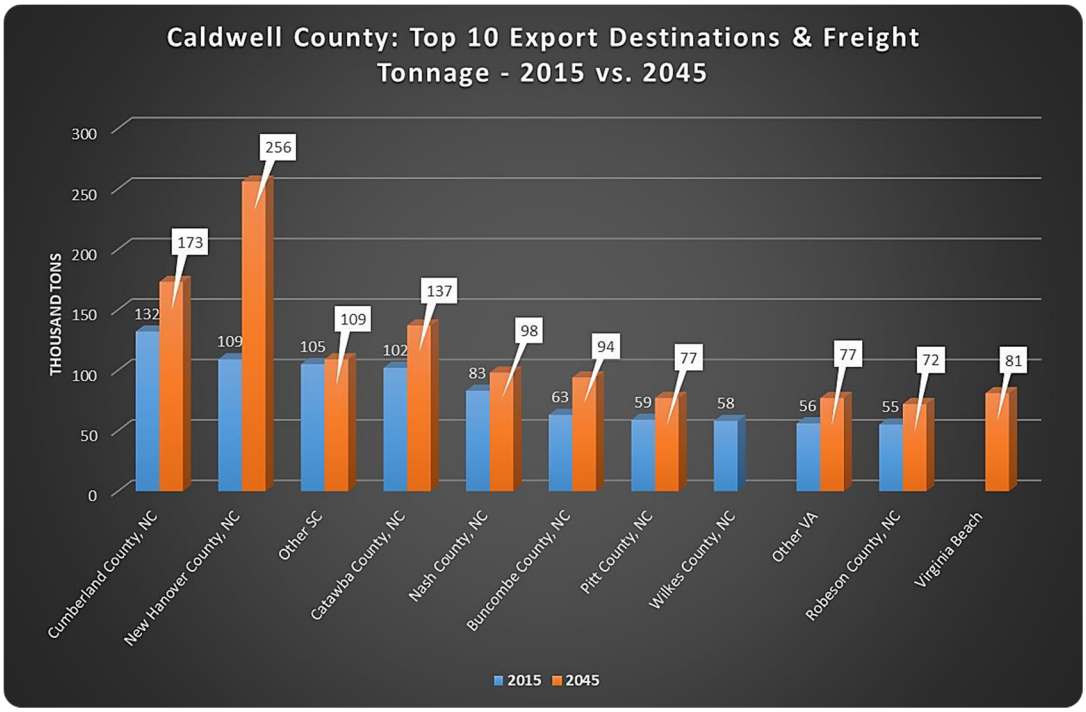


Most of the region's top 10 import and export markets are located either in North Carolina or within the southeastern US.

Caldwell County Total Freight Tonnage: (Thousand Tons)

2015: 6,591

2045: 8,872

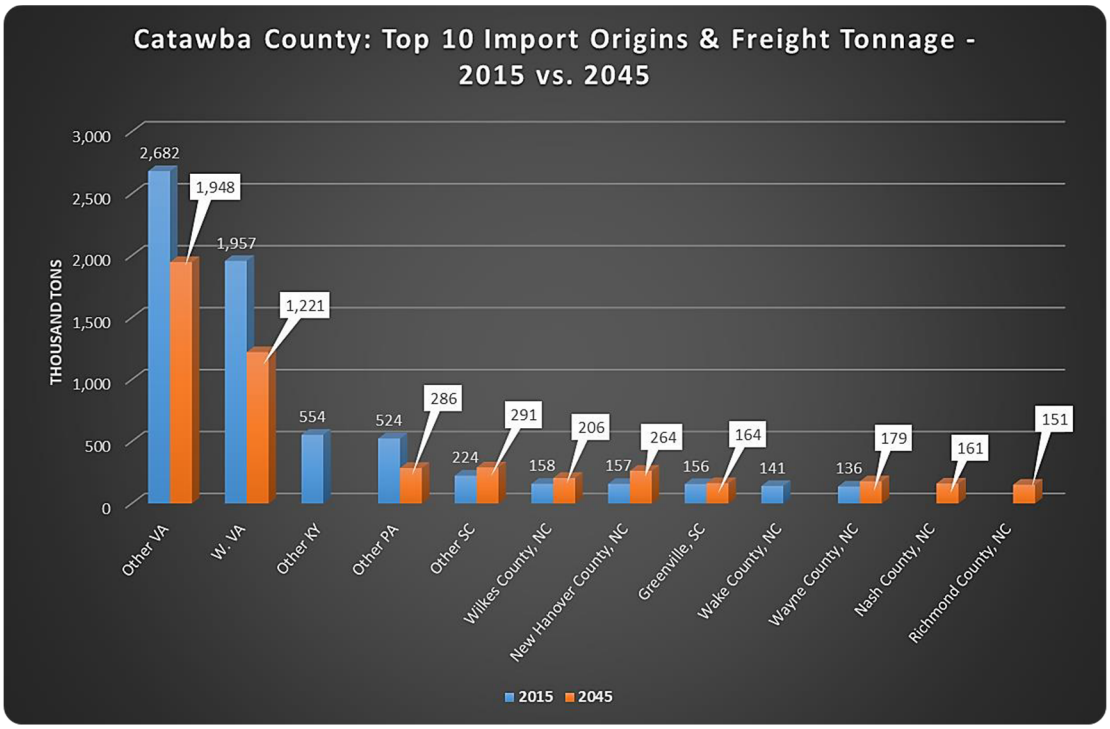


In most cases, each county's top ten import and export destinations are projected to remain the same, though freight tonnage is projected to increase.

Source: North Carolina Freight Flow Tool, Cambridge Systematics, 2018.

Catawba County:

Charts 12-7 & 12-8.



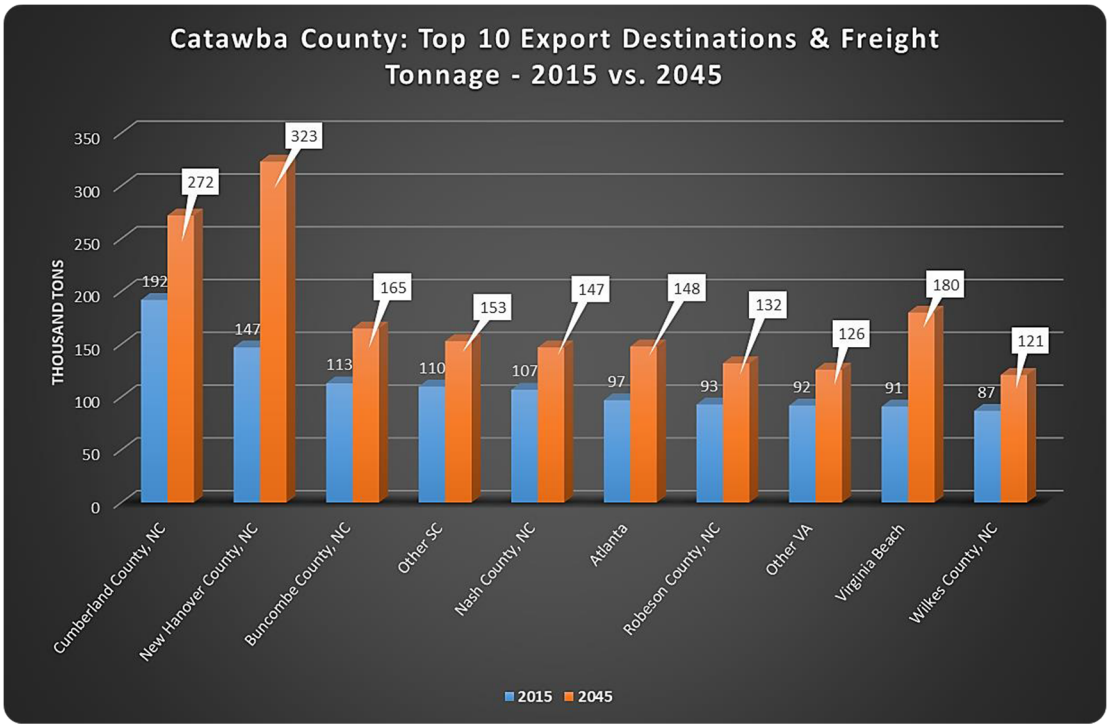
Most of the region's top 10 import and export markets are located either in North Carolina or within the southeastern US.

Catawba County Total Freight Tonnage:

(Thousand Tons)

2015: 16,213

2045: 18,641



In most cases, each county's top ten import and export destinations are projected to remain the same, though freight tonnage is projected to increase.

Source: North Carolina Freight Flow Tool, Cambridge Systematics, 2018.

Freight's Importance to Rural Communities:

Freight transport is critical to support rural industry as it transports the raw goods and products needed to support and promote growth in rural economies. Well-planned, multimodal freight systems provide opportunities for companies to locate and grow in rural regions due to efficient and reliable connections with major markets and ports.

Intermodal facilities and logistics centers located in rural areas can benefit from lower costs than urban areas and may be strategically located at a key transfer point in a freight corridor.

Rural freight transportation also poses challenges to policymakers. For example, the restructuring of the rail industry has led to the abandonment of many branch lines, cutting off service to many rural areas, leading to grain elevator consolidation along mainline and increased truck travel on rural roads to get wheat from farms to grain elevators.

Heavy truck traffic along freight corridors passing through rural areas can also raise road maintenance costs without bringing direct economic benefits to the area. Such issues present challenges for rural regions, which have fewer resources and less flexibility to address such issues.

Alexander County Industrial Park Shell Building.

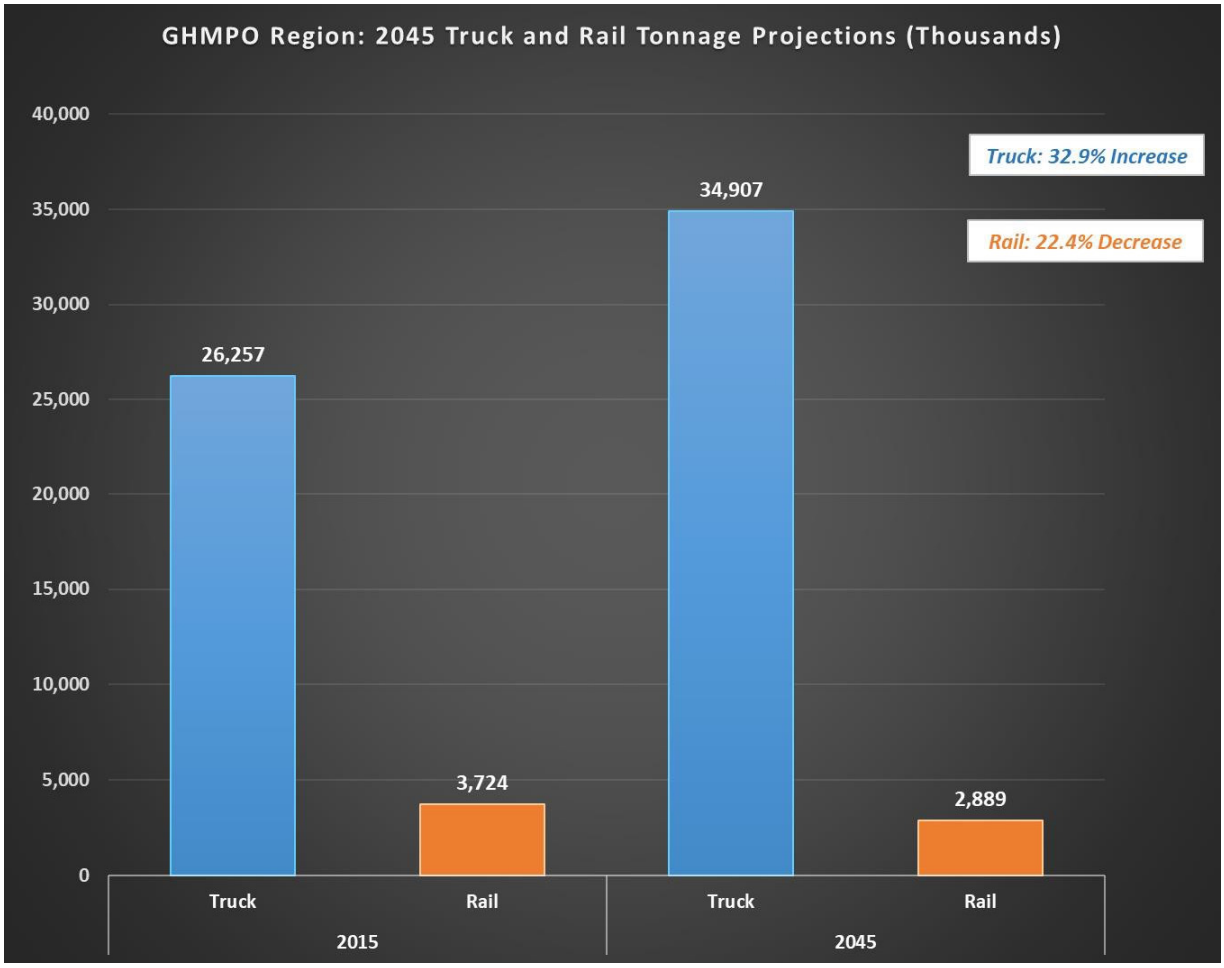
Sources: Alexander Railroad, Alexander County Economic Development Corporation.

Changes in GHMPO Freight Haulage:

Regional Freight Projections

Freight tonnage shipped by truck in the GHMPO is forecasted to increase approximately 33% by 2045. Rail freight tonnage is projected to decline by approximately 22%.

Chart 12-9.



Source: North Carolina Freight Flow Tool, Cambridge Systematics, 2018.

Note: Year 2015 rail data is from 2014.

Modal shift

The federal government's 2016 report, "Beyond Traffic 2045," details recent changes in the movement of domestic and international freight. According to the report, increases in freight demand will occur across every mode in the U.S., with highway freight (truck) predicted to expand by 44% by 2045, and air freight to increase a staggering 234% across the same period. While air freight in the GHMPO is not projected to increase significantly by 2045, truck freight is projected to increase by 32.9%. The region's rail traffic is projected to decline by 22.4% in 2045.

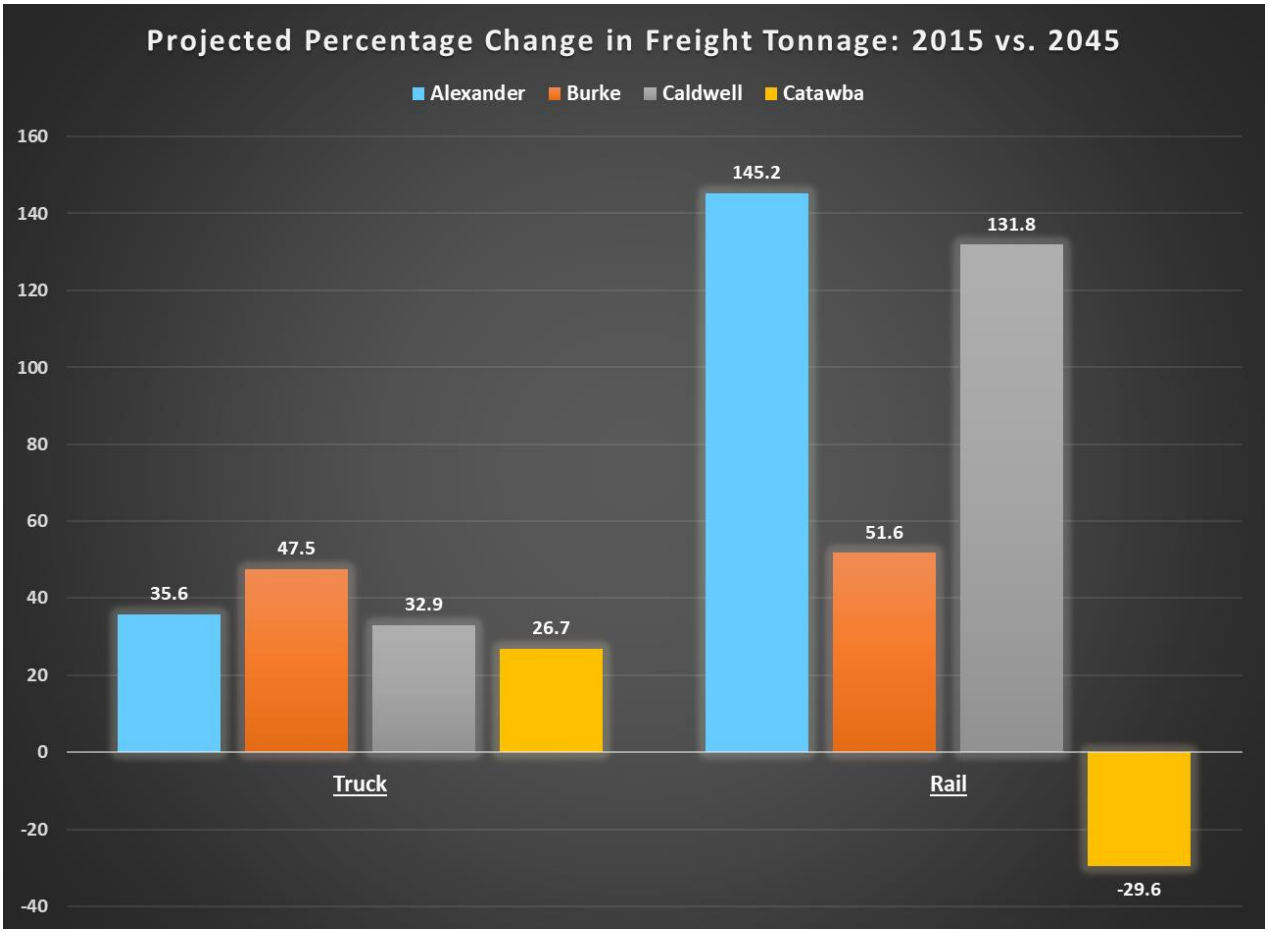
The projected increase in truck freight tonnage has implications for the GHMPO. Increased freight tonnage will likely lead to an increase in overall truck traffic. In turn, this increase could lead to increased congestion and emissions. More truck traffic could also result in increased road maintenance costs.

Changes in GHMPO Freight Haulage:

Percentage Change in Freight Tonnage by County: 2015 vs. 2045

All counties in the GHMPO region are projected to experience an increase in truck freight tonnage. Alexander, Burke, and Caldwell counties are projected to have significant increases in rail freight tonnage (although from relatively modest bases), while Catawba County is forecast to experience a nearly 30% decline in rail freight tonnage.

Chart 12-10.



Source: North Carolina Freight Flow Tool, Cambridge Systematics, 2018.

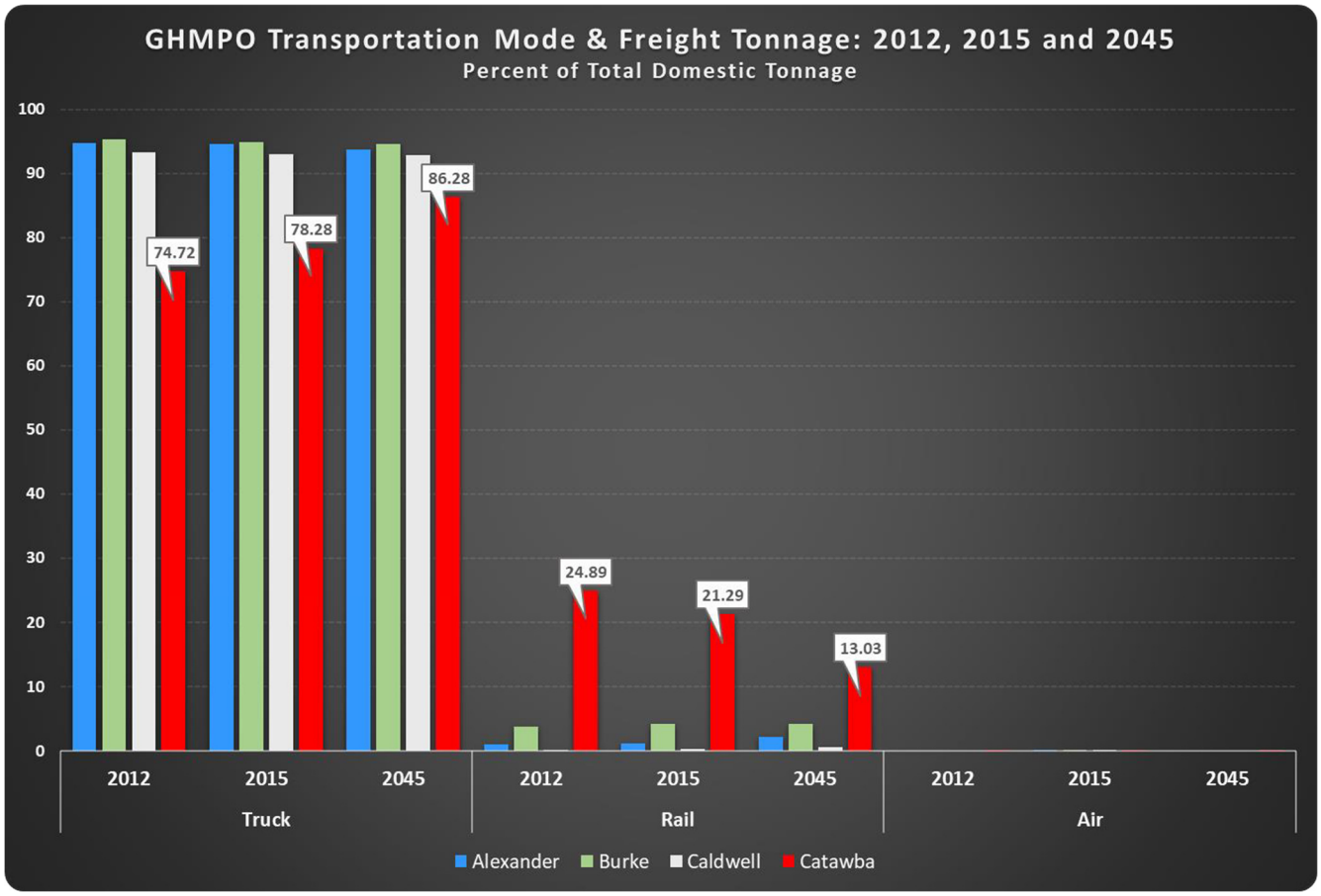
As discussed above, these changes in freight transportation could lead to a range of impacts in the GHMPO, from increased congestion and emissions to increased road maintenance costs. However, increased rail freight tonnage (if realized) has the potential to offset some of the environmental and congestion concerns associated with the projected increase in truck freight tonnage.

Changes in GHMPO Freight Haulage:

GHMPO Transportation Mode & Freight Tonnage: 2012, 2015, and 2045

Throughout the near-term past (2012-2015) truck, rail and air freight tonnage share has remained relatively consistent in Alexander, Burke, and Caldwell Counties. However, Catawba County's truck freight tonnage share increased from 74.7% in 2012 to 78.2% in 2015. By 2045, truck freight tonnage share in Catawba County is projected to increase to 86.2%. Catawba's rail freight tonnage share declined from 24.8% in 2012 to 21.2% in 2015 – and is projected to decline to 13.0% by 2045.

Chart 12-11.



Source: North Carolina Freight Flow Tool, Cambridge Systematics, 2018.

Freight forecasting is a complex task with many variables. Changes in manufacturing locations, global economic forces, competition, new technologies, political dynamics, regulations, trade agreements, the opening of new routes, and labor disputes can each have their own unique effects on freight flow.

The projected decrease in rail freight tonnage may be due to several factors including change in commodity mix (some commodities are cheaper to transport by truck), reductions in rail freight capacity or new freight transportation technologies. Firm conclusions are elusive, but given the GHMPO's interest in increasing rail freight shipments and the presence of 2 short-line railroads (Alexander Railroad and Caldwell Railroad) and the Norfolk Southern line (with service to the Claremont International Business Park) freight rail trends should be actively monitored.

The importance of freight activity in the region is further underscored by considering the dollar value of freight shipments. Already at significant levels, freight dollar values are projected to increase in all GHMPO counties by 2045. Overall, the region's freight dollar value is projected to increase by nearly 32% by 2045.

Table 12-10. GHMPO Freight Shipment Dollar Values: 2015 vs. 2045.

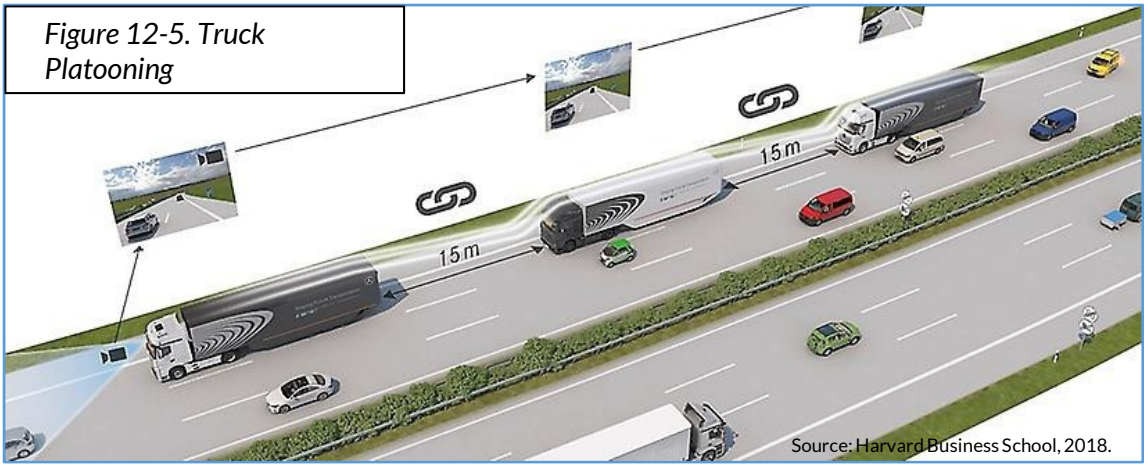
County	Dollar Value (Millions)		% Change 2015-2045
	2015	2045	
Alexander	$2,890	$4,553	57.5%
Burke	$6,925	$12,109	74.9%
Caldwell	$7,324	$11,380	55.4%
Catawba	$14,776	$24,432	65.3%
GHMPO TOTALS	**$39,915**	**$52,474**	**31.5%**

Source: North Carolina Freight Flow Tool, Cambridge Systematics, 2018.

Technological Advances and Vehicle Automation

The freight industry is quietly going through a technological revolution as information and communications technologies are applied to optimize global supply chains. These technologies and business innovations are accelerating trends that have led to 30 years of declining logistics and transportation costs relative to GDP. Emerging supply chain optimization practices are resulting in firms placing a premium on the reliability of transportation services.

Figure 12-5. Truck Platooning



Source: Harvard Business School, 2018.

Manufacturers and shippers are becoming better and better at using information technology to optimize performance. Today, the private sector uses new technologies to analyze demand and rapidly adjust supply chains. This is not a new practice, but enhanced data systems now provide manufacturers and distributors access to real-time information that allows them to adapt more quickly than ever before.

Private firms are also changing the way they package and ship products to make deliveries more efficient. Delivery consolidation through less-than-truckload deliveries combines multi-stop shipments into a single truck, and reduces the number of trucks on our highways.

Similarly, firms are now using mobile technology to connect truck drivers to last-mile freight orders that can fill excess truck capacity. By matching supply and demand, these companies have the potential to improve the efficiency of independent operators. These efficiency innovations may also help to reduce the impact of growing demand on the capacity of our freight transportation system.

Recent technological advances in data analysis systems, automatic vehicle and container identification systems, and satellite navigational systems will improve the efficiency of freight movement. These technologies will improve situational awareness, allowing real-time decentralized access to location and operational data. Understanding where a package is at any given time (even when it is in the air or on the road), and when it is due to arrive will allow for more efficient movement of freight across modes and through processing facilities.

Advances in information and communications technologies will improve data collection and analysis capabilities of logistics firms and freight planners, enabling faster and more accurate analysis of freight routes, travel times, and infrastructure capacity. They will also improve safety by automating and expediting inspection processes, and by allowing for improved monitoring of security information.

Fully and partially automated trucks, ships, and planes, and automatic freight-transfer facilities may eventually transform the freight industry. Autonomous vehicles will not suddenly appear on our roads, but automated features that promise to improve the safety and efficiency of freight movement are already being introduced. On trucks, these include sensor systems that combine adaptive speed control, automatic braking, lane-departure warning systems, and vehicle-to-vehicle communications. By allowing sensors on one truck to communicate with

sensors on another truck, partially automated trucks could soon travel more closely together to improve fuel efficiency, in a practice known as truck platooning or truck trains.

Automation is already affecting ports. At major container ports around the world, the process of transferring containers from ships to docks, trucks, and trains is becoming highly automated, reducing reliance on human operators. Major American container ports will need to invest in automation to compete.

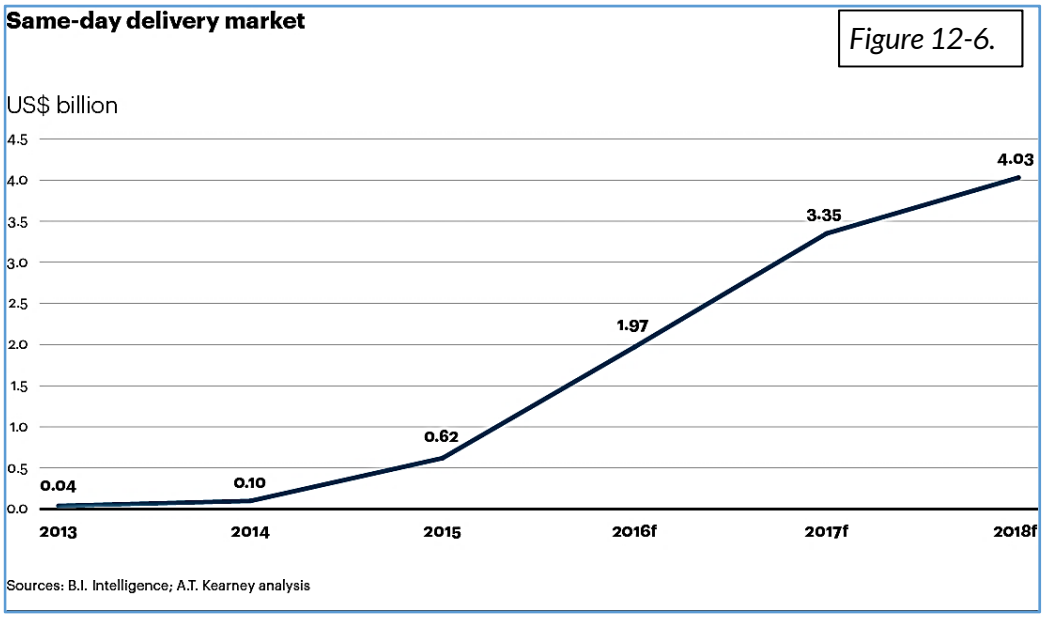
Automation will change the nature of work in the freight industry. Advanced automation will increase productivity in the freight industry and change the skills needed to work in freight. Technologies that affect driving, vehicle maintenance, warehousing, and loading will alter professional development needs, and employment levels—and will affect the average income for transportation workers. Managing and maintaining automated ports and fleets will require advanced mechanical and data analysis jobs, which demand higher skills and higher pay than traditional freight work.

While some innovations in freight, such as automated driving, seem incredibly complex, some of the most transformative innovations are remarkably simple. The container—a large, standardized metal box used for cargo shipments—has become the essential unit of intermodal freight movement. Since its introduction as an alternative to conventional break-bulk cargo shipping in the 1960s, the container has influenced virtually all aspects of the freight transportation system, including the size of cargo ships, the design of container ships, the structure of freight railroads, and the scale of global trade.

E-Commerce

The prevalence of e-commerce is a result of evolving socioeconomic and technological trends. Most notably, the ever-expanding consumption of goods, the emergence of the service sector, and exponential advances in technology, which has removed certain consumer barriers and has allowed patrons to purchase goods freely from the global market. These trends place a great burden on the country's already strained transportation network; and will undoubtedly result in unforeseen challenges in the years and decades to come. Planning around the impacts of e-commerce will require a detailed understanding of its many complex and interrelated processes. As large enterprises will adjust to these processes more quickly than government agencies, land use and transportation planners, as well as freight and supply chain stakeholders must work together to address and solve resulting issues and emerging concerns.

Figure 12-6.



These trends will result in challenges, including; increased congestion, negative environmental impacts, safety issues, workforce challenges, and policy implications. As such, in order to adequately plan and coordinate amongst the varying organizations involved in the transportation planning process, it is important to define clearly these emerging trends affecting freight movement in the Western Piedmont.

Table 12-11. Potential Impacts of Future Freight Trends in the GHMPO.

Innovation	Impacts	
	Positive	Negative
Same-day Delivery (e-commerce)	Short-haul delivery sector employment	Increased traffic
		Environmental
Truck Platooning	Fuel efficiency	Environmental
	Increased throughput	
Remote Truck Operations/Automation	Training/Employment	Parking space
		Employment
Drones	Training/Employment	Airspace concerns
		Employment

Sources: Deloitte Insights, GHMPO staff, 2018.

Future Freight Scenario - Remote truck operation/Autonomous trucks:

- Autonomous trucks used on highway
- Park at a central location
- Humans drive to final destination/humans pilot trucks to final destinations from remote facility
- Potential need for more truck parking

Nature of the truck driving profession changes significantly:

- Truck drivers work in offices; drive trucks remotely from the office for the last few miles on several different routes in several different cities.

Freight Stakeholder Participation

Trucking Survey-Freight Movement in North Carolina's Western Piedmont:

The GHMPO Trucking Survey was conducted in 2016/17. It was available from August 2016 through April 2017 via Survey Monkey and was also hand delivered to several freight operators in the region. Eighteen responses were received. Respondents were asked to rate specific conditions based on a scale of 1 to 5, with 1 being not a serious issue and 5 being a very serious issue. The following responses had a weighted average of 3 or higher, indicating that respondents had mild to very serious concerns about an issue:

Lack of truck stops: Weighted average 6.35

- I think this problem will be fixed with new Loves truck stop. Not a lot of places for truck to stop with lighting now.
- 321 between Hickory and Lincolnton.
- 321 could use more truck stops.
- This issue is not as bad in NC as in other areas of the country, however; with the HOS regulations, many drivers run out of options when the truck stop that they had planned to take their break at is full. Larger metro areas such as Charlotte, Raleigh, and Durham should have more truck-stops or larger rest areas to accommodate more trucks.
- Need more truck stops on these routes.

Inadequate stop light timing: Weighted average 3.71

- Throughout Hickory. Long sections on 321, Tate Blvd, Hwy 70 cause multiple stops due to no sync
- The lights at 321 at CVS in north Hickory and the lights at 321 and pinewood ext in Granite are a problem at time.
- This is an issue at multiple traffic lights.
- Hwy 127 N.
- Hwy 127 all the way through Hickory.
- 321 at McDonald's.
- Hwy 321/McDonald Parkway.
- The caution timing in many cases is much too quick for a vehicle that is long and heavy to come to a safe stop if traveling at highway speeds. Most truck drivers have been trained to anticipate that at any given intersection they should be prepared to stop even if the light is green, however; many times drivers are in areas that they are not familiar with and quickly timed lights may catch them off guard. Longer caution lights would help with this problem.

Pavement conditions: Weighted average 3.24

- All over.
- Some areas are becoming an issue. Rough broken pavement can cause tire damage and suspension damage to a vehicle that is carrying heavy loads at highway speeds. It seems that the state wastes taxpayer money and re-paves roads that do not need re-paving just because it is on the books to be re-paved at a certain time. Many heavily traveled roads that are in need of re-paving are neglected. It seems that common sense has totally gone away in the use of taxpayer money when it comes to paving.
- Some parts of road surface on these routes need resurfacing.

Inadequate stop light timing: Weighted average 3.24

- Not enough green time on I40 exit ramps to allow trucks to get from ramp onto highway. I40 at x133, 127, 125
- There needs to be more time between yellow and red.
- Fairgrove Church Rd. /Hwy. 70.
- Hwy 127 all the way through Hickory.
- Need more time on the caution light to slow down and stop a large heavy vehicle.

Pavement conditions: Weighted average 3.18

- Newton North Main Ave.
- All over.
- 127 manhole cover too high.
- Stop repaving good surfaces and start repaving poor surfaces.

Inadequate parking facilities: Weighted average 3.06

- Lack of truck parking, rest areas, needed for drivers to meet Federal drive time regulations.
- Anywhere on any major interstate throughout the nation.
- Rest areas are too small for today's trucking environment. Allow drivers to park in the weight scale lots if room allows. Expand parking at weight scale facilities or create safe haven parking areas for trucks only.

Insufficient turning radius: Weighted average 3.06

- No comments

Inadequate parking facilities: Weighted average 3.06

- No comments

Respondents also indicated that the GHMPO should:

- Serve as an advocate for public and private freight stakeholders
- Be a provider of freight-specific information
- Use land use planning and policies to ensure freight development areas
- Monitor development of advanced technologies
- Develop emergency plans to ensure critical supply chains
- Assess rail grade crossing safety
- Increase freight signage indicating alternative routes

Complete survey results are located in Appendix A.

Freight Planning Workshop:

On August 23, 2017 GHMPO staff conducted a Freight Planning Workshop to collect citizen input regarding the region's freight transportation network. Attendees were briefed on the North Carolina State Highway Plan, future funding availability and current issues pertaining to freight mobility in the region.

Attendees at the workshop identified several freight transportation issues including:

- Widening I-40 between exit 123 and 128 to 3 lanes
- Alignment of S. Carolina Avenue and S. Main in Maiden
- An increase in truck traffic in Conover at 5 Points
- The need to re-evaluate the interchange design at US 321/I-40
- Creating a West Loop in Claremont for truck traffic
- Adding a lane at US 321 and Pine Mtn. Rd. for truck driving school for safer entry and exit

Recommendations and Stakeholder Input

Listed below are outstanding items from previous surveys and stakeholder meetings:

• Interstate 40 needs to be widened to six lanes from Exit 132 to Exit 123, the interchange with US 321;

• Traffic flow problems will occur on US 321 when the new bridges will be built over Lake Hickory during the widening of US 321 to 6 lanes;

• An east-west thoroughfare in the northern part of Hickory is needed;

• A rail lift facility in the area is needed to consolidate shipments out of the area into Charleston and Savannah; and

• Getting passenger train service from Salisbury to Asheville should be a high priority for the region.

Freight Transportation Improvement Projects:

Most truck routes are on the Transportation Improvement Plan to be upgraded or have just recently been improved. I-40 was recently resurfaced through Catawba and Burke counties. US 321 is planned to be widened to 6 lanes from US 70 in Hickory to US 64/NC 90 in Lenoir, including a new bridge over Lake Hickory. Section A of the US 321 project is under way (utilities). Several interchanges and overpasses on I-40 in Burke County have been upgraded to accommodate freight traffic. The City of Hickory has plans to synchronize traffic lights on NC 127 to allow more efficient flow of traffic during high volume times.

Overpass repair work on Interstate 40 in Burke County.

Photo via morganton.com.

Highway Recommendations:

To facilitate truck movement in our region, truck routes should be designated along the major freight corridors. These routes should avoid streets and roads that are not designed for heavy truck traffic. Signs should be posted to notify drivers of the designated routes for their use. Street design elements for freight trucks should be considered when truck routes are improved or new streets are created, especially in industrial parks and manufacturing areas. At a minimum, these elements should include:

- Ample lane width – 12 feet minimum;
- Turning radii – 25 feet minimum;
- Separation from pedestrian facilities and bicycle lanes, for example with 5 foot planting strips.

As our region works to attract new types of industry, our transportation network could be an important feature if improvements are made to keep vehicles circulating on the two main thoroughfares, Interstate 40 and US 321. These improvements include:

- Working with NCDOT to prioritize improvements to insufficient Interstate 40 interchanges;
- Synchronizing traffic light timing on major freight routes at high volume times to reduce noise and air pollution, especially within city limits;
- Ensuring new industrial and manufacturing areas have sufficient access to arterials;
- Encouraging municipalities to incorporate the above design criteria into their street design requirements, especially in industrial areas and on truck routes;
- Working with NCDOT to provide traffic relief and alternate routes prior to bridge construction on US 321;
- Reviewing these ideas periodically with the freight stakeholders, such as manufacturers, trucking companies and municipal officials, to ensure projects are beneficial for stakeholders.

Air Freight Recommendations:

The GHMPO supports the recommendations made by the Hickory Regional Airport Task Force to support airport's continued development. Those recommendations are:

- The City of Hickory should continue its attempts to regain commercial air service even though that service is unlikely to return in the near term;
- Continue funding to staff the airport's control tower; and
- The facility be expanded, specifically runways should be lengthened to accommodate a greater variety of aircraft

Increased capacity for air freight and passenger aircraft can help economic development in the area. If the physical capacity of the Hickory and Foothills regional airports is increased, more freight companies (such as FedEx and UPS) may use the airport and local manufacturers could ship or receive goods.

- Support the Foothills Regional Airport's freight transportation needs

Rail Freight Recommendations:

Moving freight by rail is safe and efficient. Increasing the rail cargo in our area can decrease air pollution by reducing the number of trucks on our roadways. By taking more trucks off the highway, the chance of truck crashes is reduced and passenger vehicle safety is increased. GHMPO recommendations for rail freight are:

- To expand the use of railways to transport more freight in the GHMPO;
- To encourage local Economic Development Commissions to pursue industries that could benefit from our rail capacity;
- To encourage the use of the Caldwell County Railway and the Caldwell County Trans-load facility for goods entering and exiting this area;
- To support the expansion of the Trans-load facility which incorporates multi-modes of freight transport;
- To encourage the NCDOT Rail Division to restore passenger rail service on the existing line from Salisbury to Asheville; and
- Actively monitor rail freight trends in the region.

Conclusion:

The GHMPO region needs to be well-equipped to make the best possible decisions to maintain the quality of life the citizens have come to expect. Unlike other areas of North Carolina and the Southeast, the GHMPO area has not fully recovered from the Great Recession of 2007.

International and domestic trade is an economic driver for the GHMPO region, the state and the nation. It is highly dependent on the availability of an integrated, efficient, reliable, safe, and flexible transportation network. Trade creates jobs (direct, induced, indirect, and related jobs), fuels economic growth, creates personal and business income, and generates revenue that contributes to federal, state, and local taxes.

Throughout the entire supply chain, jobs are created in manufacturing, retailing, wholesaling, construction, transportation, and warehousing sectors. In a globally competitive environment, addressing freight infrastructure and operations needs must be a priority. However, such efforts must be judicious, balancing economic goals with the goals of safety, security, community, and environmental conservancy.

The GHMPO transportation system needs to remain adaptable to new opportunities, but must remain safe, efficient and reliable. These freight recommendations address immediate transportation needs and offer a path to realizing a more economically diverse future.