

# North Carolina Statewide Multimodal Freight Plan Update

**Freight Advisory Committee** 

**April 19, 2022** 

### **Agenda**

- Approach Overview
- Freight Network Designation
- Commodity Flow Overview
- Freight Modal Profiles

Highway & Trucking

Truck Parking

Rail

Air

Waterways

Pipeline

**Hazardous Materials** 

Military

- Next Steps
- Discussion

### **Meeting Polling**

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OR
Text FAC22 to
984-205-6615



### **Approach Overview**

### FREIGHT PLANNING

Today's Discussion



Vision , Goals & Objectives

Freight System Inventory & Assessment

**Commodity Flow Analysis** 

**Mutlimodal Needs Assessment** 

**Project Prioritization** 

**Implementation Strategies** 

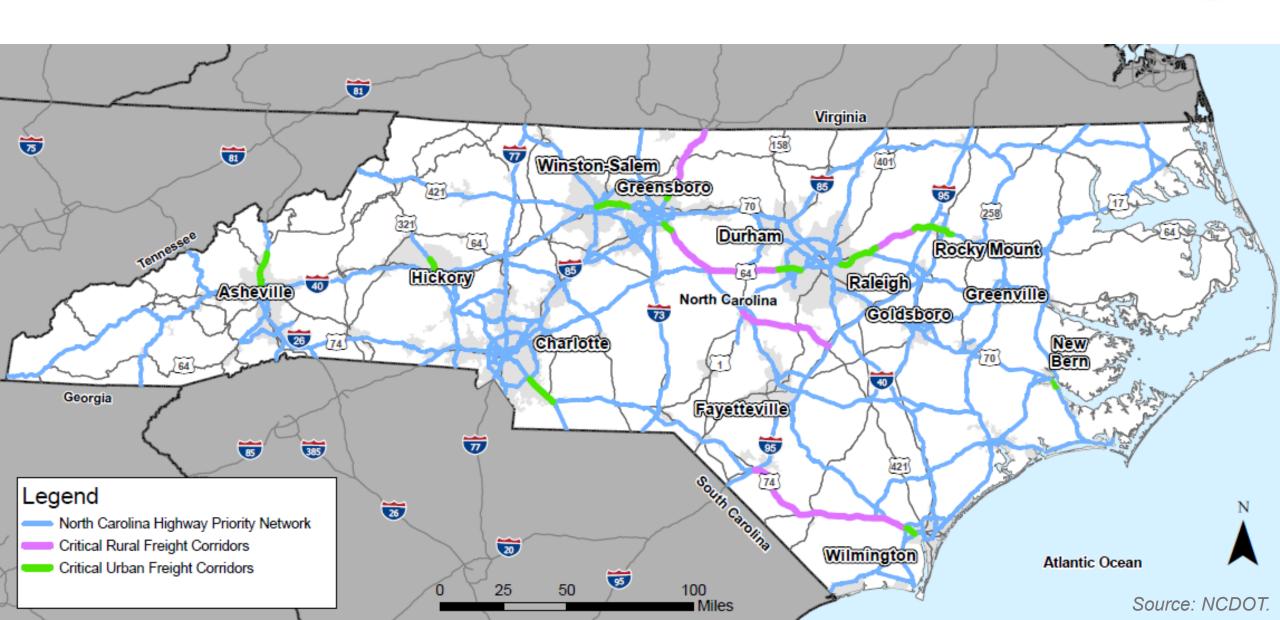
Statewide Outreach & Engagement

MULTIMODAL FREIGHT PLAN



### NC Freight Network Designation

### **2017 NC Highway Freight Network**



1. Are there any additions you would make to the North Carolina Highway Freight Network?

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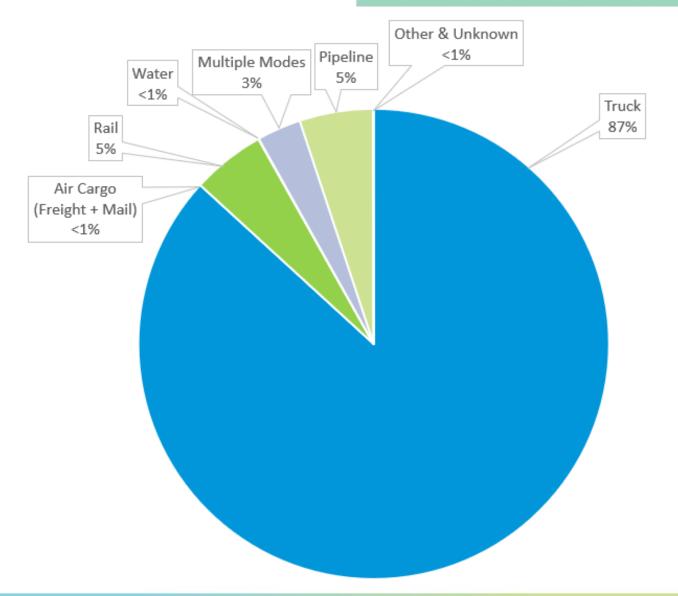
### North Carolina Commodity Flow Overview

### **NC Commodity Flow Projection**

Freight Tonnage
Projections by
Mode (Millions of
Tons)

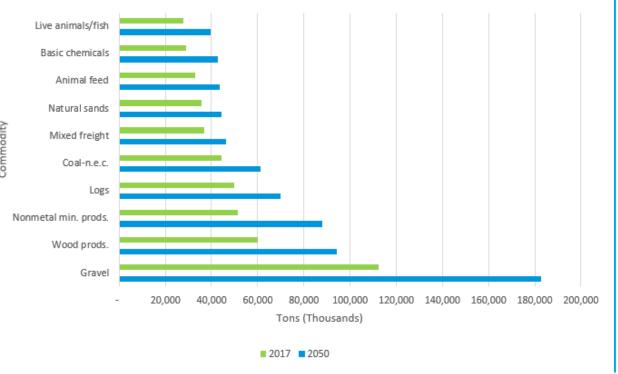


2017 Freight
Tons by
Mode

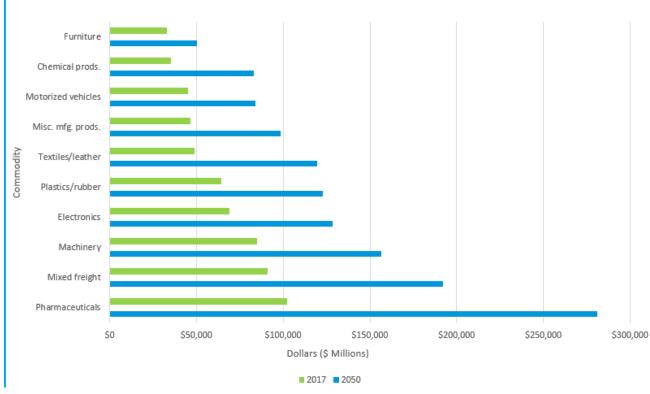


### **NC Top Commodities**

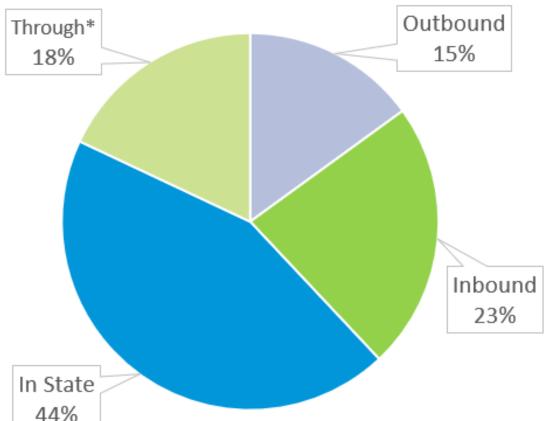
Top Commodities by Tonnage 2017 and 2050



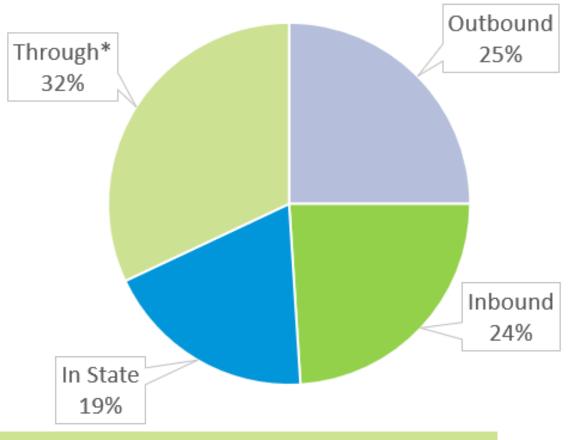
### Top Commodities by Value 2017 and 2050



### **Tonnage by Direction, All Modes**

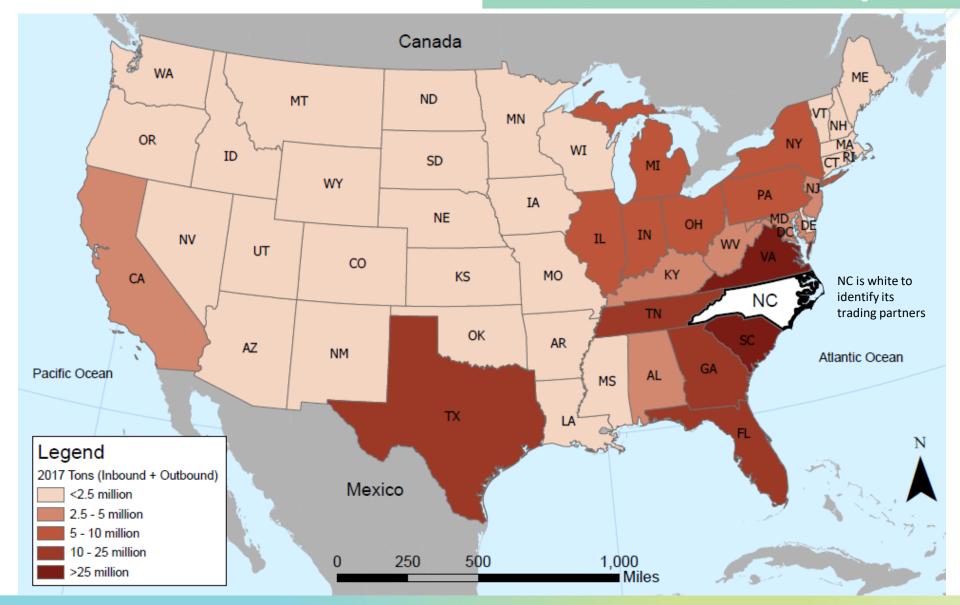


### **Value by Direction, All Modes**

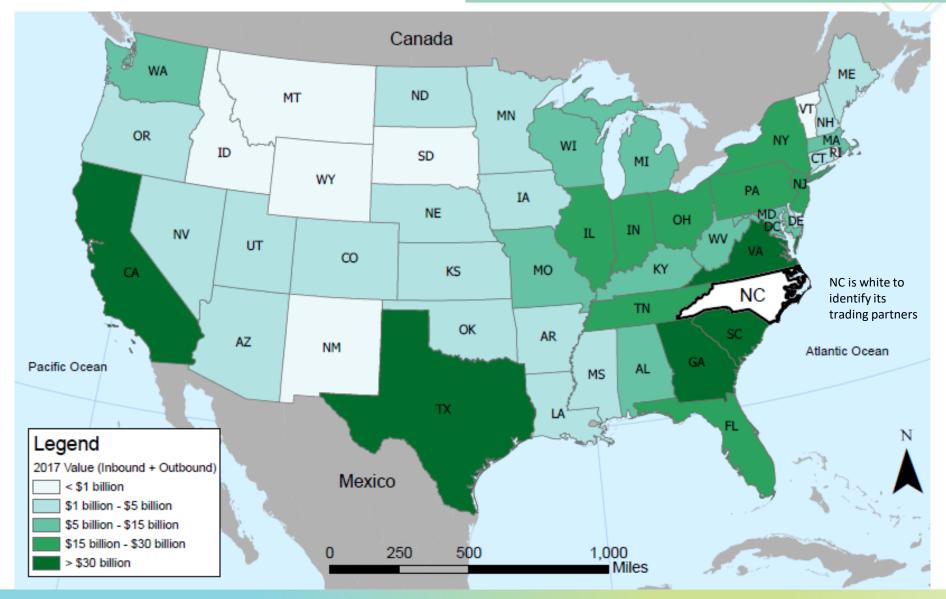


In 2017, In State traffic comprised the largest share by weight and through traffic comprised the largest share by value

- 84% of trading is east of Mississippi River
- Machinery (CA)
   and natural
   sands (TX) are
   the primary
   commodities
   by tonnage
   traded with CA
   and TX



- 78% of trading is east of Mississippi River
- Electronics is the primary commodity by value traded with both CA and TX



- 2. How confident are you in the reported base year commodity flow volumes:
  - Very confident
  - Somewhat confident
  - Neither confident nor not confident
  - Somewhat not confident
  - Very not confident

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- 3. How confident are you in the reported future year commodity flow volumes:
  - Very confident
  - Somewhat confident
  - Neither confident nor not confident
  - Somewhat not confident
  - Very not confident

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- 4. How confident are you in the reported modal split commodity flow volumes:
  - Very confident
  - Somewhat confident
  - Neither confident nor not confident
  - Somewhat not confident
  - Very not confident

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- 5. How confident are you in the reported trading partners commodity flow volumes:
  - Very confident
  - Somewhat confident
  - Neither confident nor not confident
  - Somewhat not confident
  - Very not confident

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### **NC** Economic Role of Freight

Sector	Average Employment (2019)	Establishments (2019)
Truck Transportation	47,728	4,428
Warehousing & Storage	33,404	532
Postal Service	19,256	799
Support Activities for Transportation	18,938	1,191
Air Transportation	15,820	122
Transit & Ground Passenger Transportation	8,303	369
Couriers and Messengers	20,978	522
Water Transportation	261	40
Pipeline Transportation	*not listed	*not listed

69.3 tons per North Carolinian



25,560 tons per business establishment



### Supply Chain Focus: Agriculture, Food Processing & Distribution

### **Supply Chain and Logistics Freight Perspective**

- Raw Materials from Domestic and International Markets
  - Rail/Barge/Ship Logistics
- Manufacturing or Processing Processing/Refinement
  - Refined Products and Services
  - Agricultural Supplies
- New Market Services
- New Market Outputs
- Logistics for export commodities



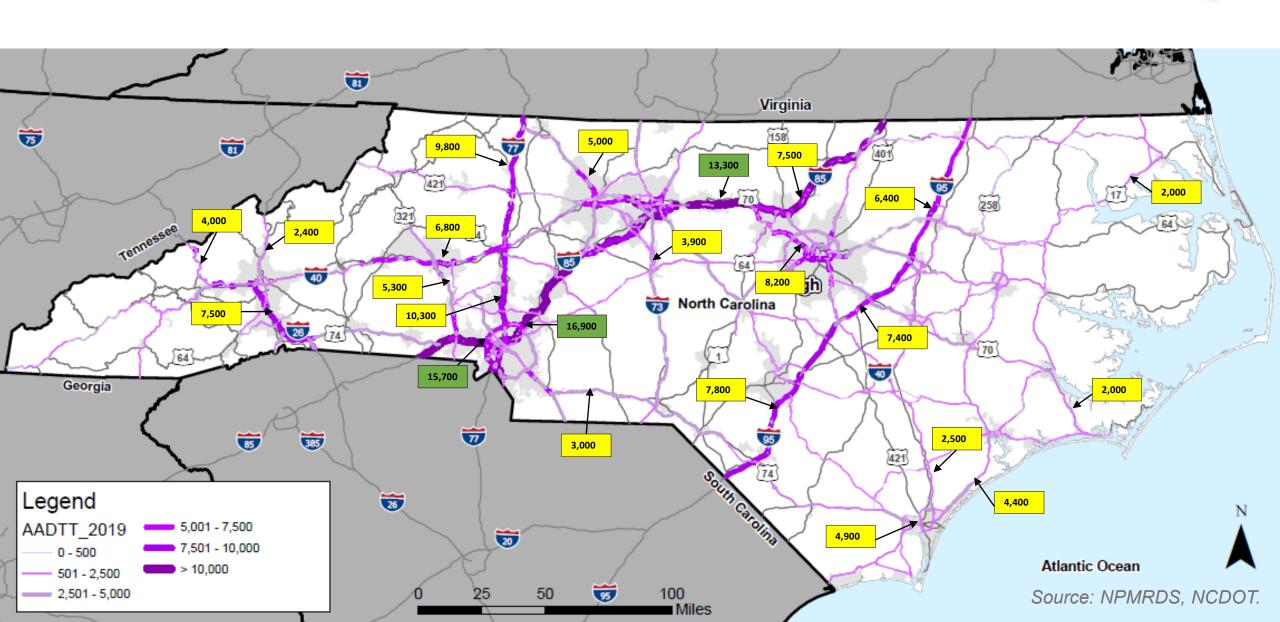
Agriculture, Food Processing, and Distribution are among the largest industries and commodities moved in North Carolina: Companies headquartered or with production facilities include: Pepsi, Krispy Kreme Donuts, Snyder's-Lance Snack and Chip,

Butterball, Smithfield, Tyson, Sanderson Farms, Mt. Olive Pickles, Campbell's Soup, Bimbo Bakeries, Sierra Nevada Brewing, and many others.



## North Carolina Highway and Trucking

### **Truck Traffic on the Freight Network**



Direction	Tonnage (Thousands)	% of Total Tons	Value (Millions) (\$)	% of Total Value
Inbound	78,445	15%*	182,620	30%*
In State	235,466	44%*	193,059	32%*
Outbound	74,573	14%*	225,605	38%*
Through*	144,755*	27%*	-	-
Total	388,484	100%	601,284	100%

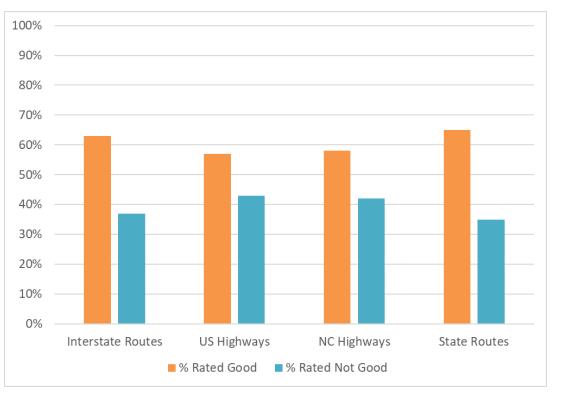
### Top 10 Commodities (by Tonnage)

- 1. Gravel
- 2. Nonmetal min. products
- 3. Logs
- 4. Wood products
- 5. Waste/scrap
- 6. Gasoline
- 7. Natural sands
- 8. Other ag. products
- 9. Mixed freight
- 10. Cereal grains

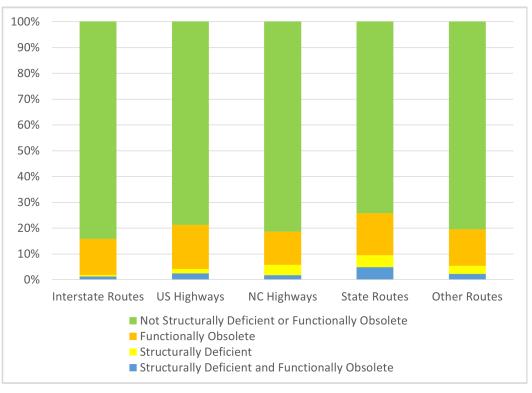
### **NC Pavement and Bridge Conditions**

on the Highway Freight Network

### **Pavement Conditions**



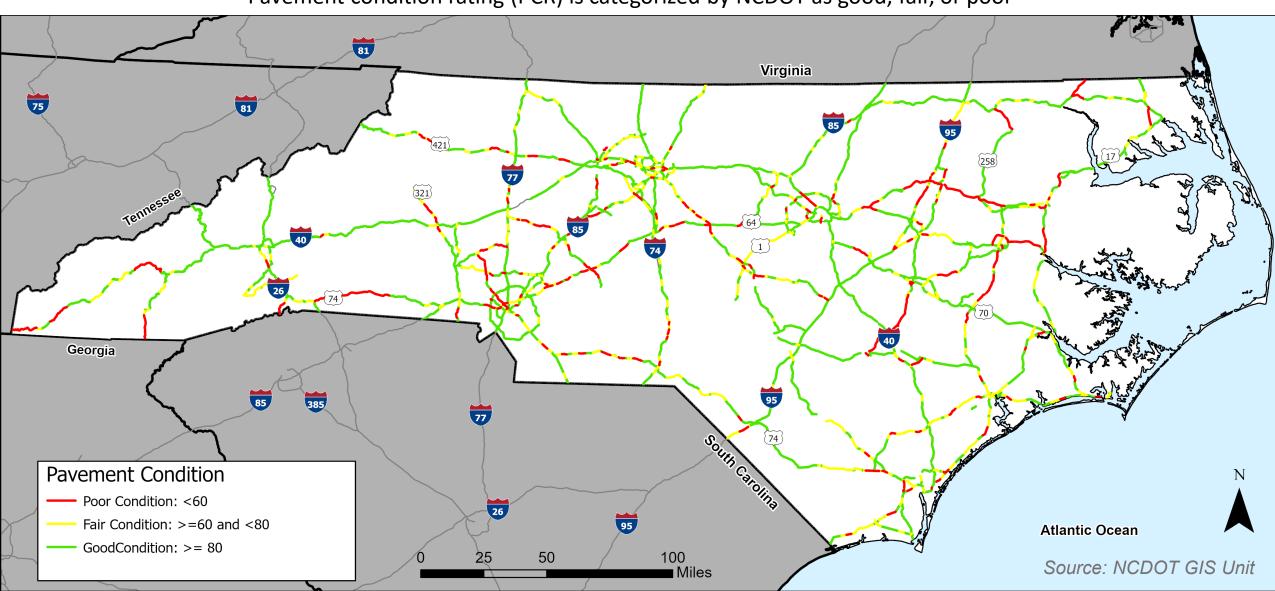
### **Bridge Conditions**



### **NC Highway Pavement Condition**

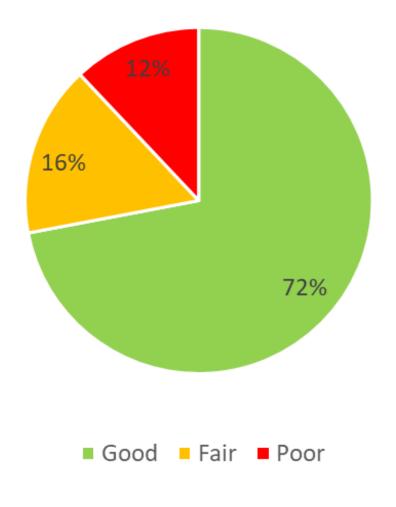
on the Highway Freight Network (2019)

Pavement condition rating (PCR) is categorized by NCDOT as good, fair, or poor

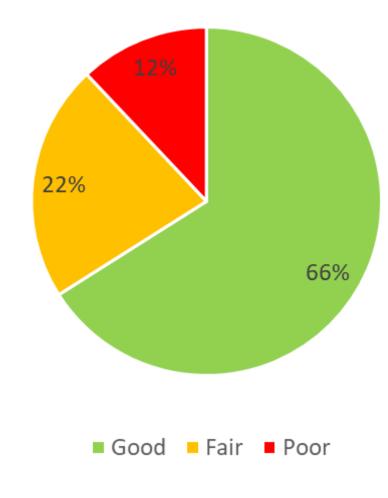


### **NC Highway Pavement Condition**

on the Highway Freight Network (2019)



NC Priority Highway Freight Network

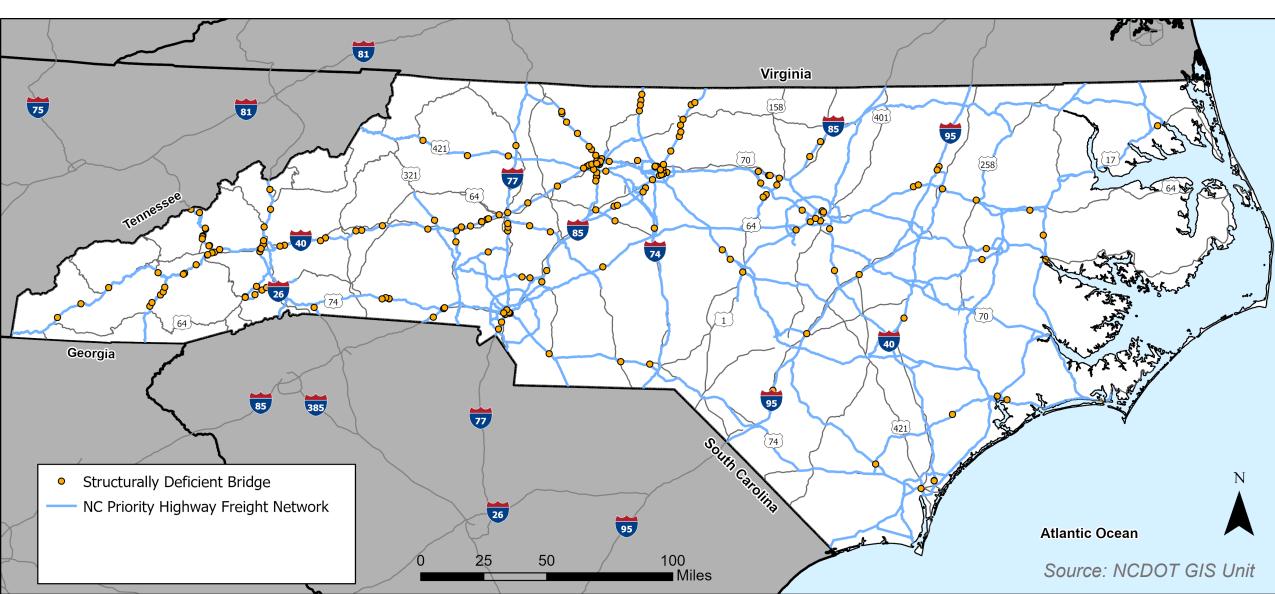


All NCDOT maintained roads

### **NC Bridges Conditions**

on the Highway Freight Network

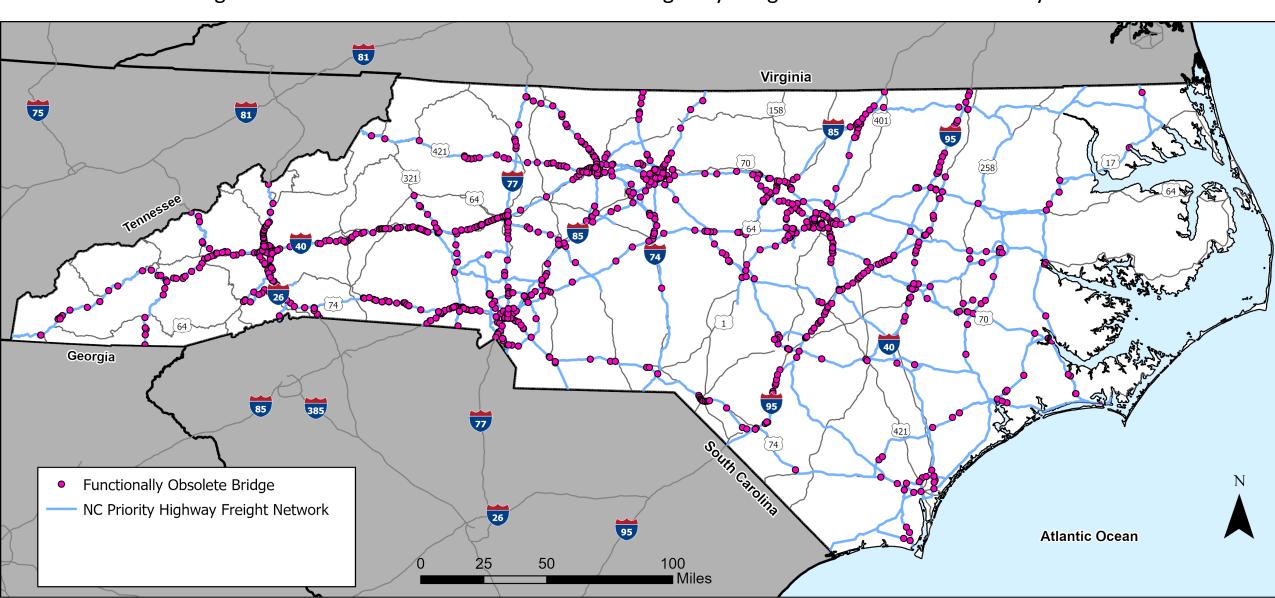
3% of bridges within 0.25 miles of the North Carolina Highway Freight Network are structurally deficient



### **NC Bridges Conditions**

on the Highway Freight Network

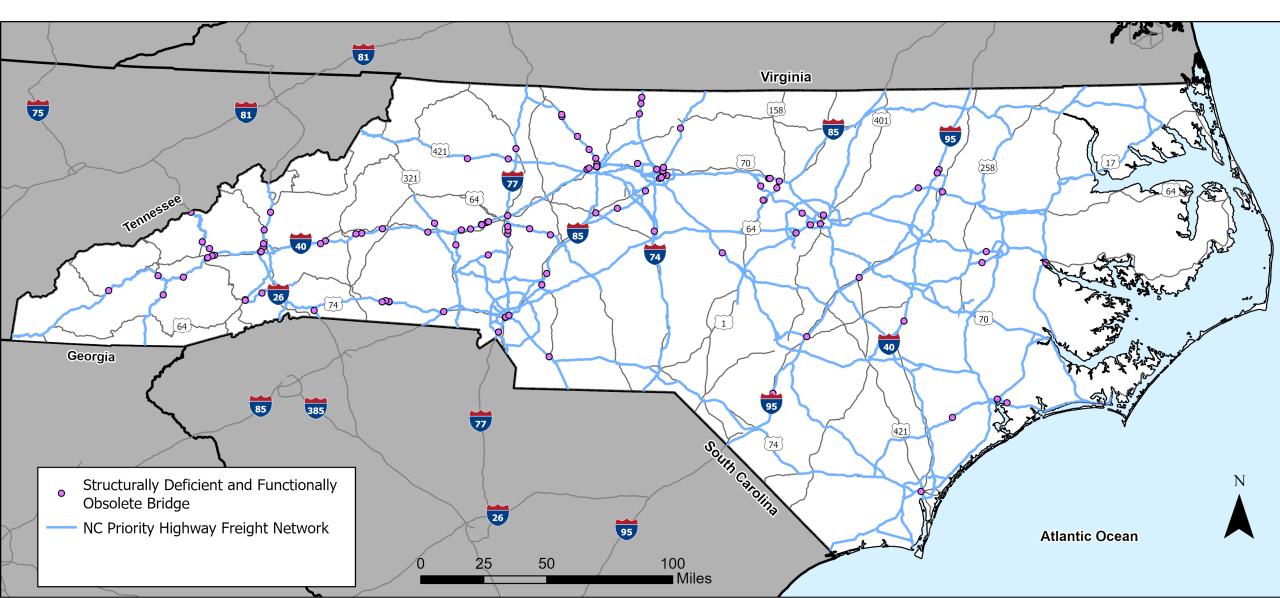
16% of bridges within 0.25 miles of the North Carolina Highway Freight Network are functionally obsolete



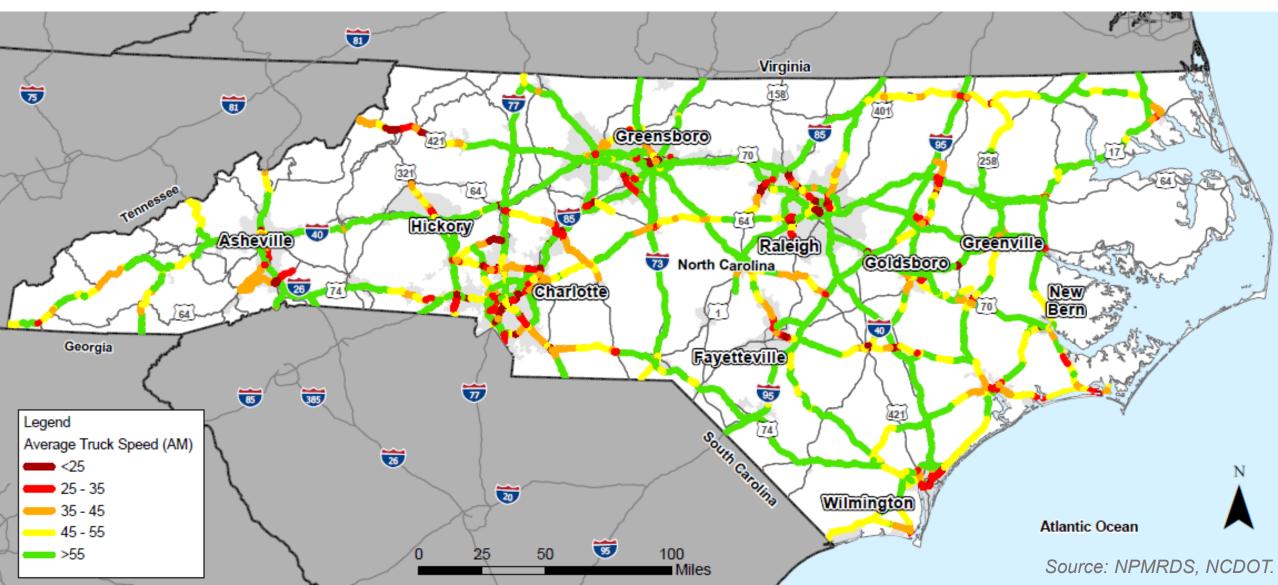
### **NC Bridges Conditions**

on the Highway Freight Network

2% of bridges within 0.25 miles of the North Carolina Highway Freight Network are structurally deficient and functionally obsolete

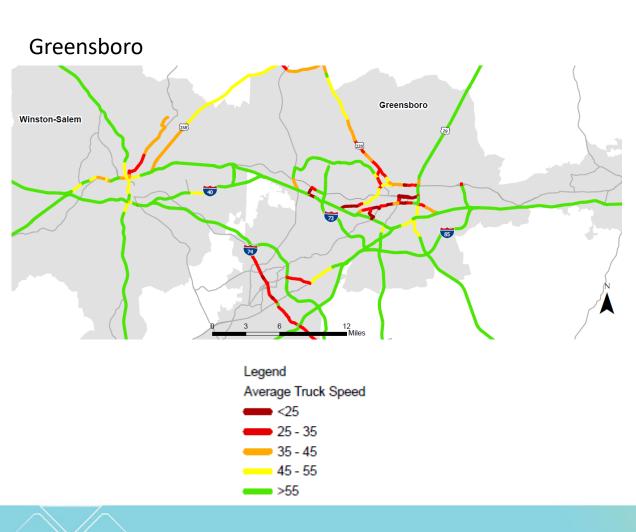


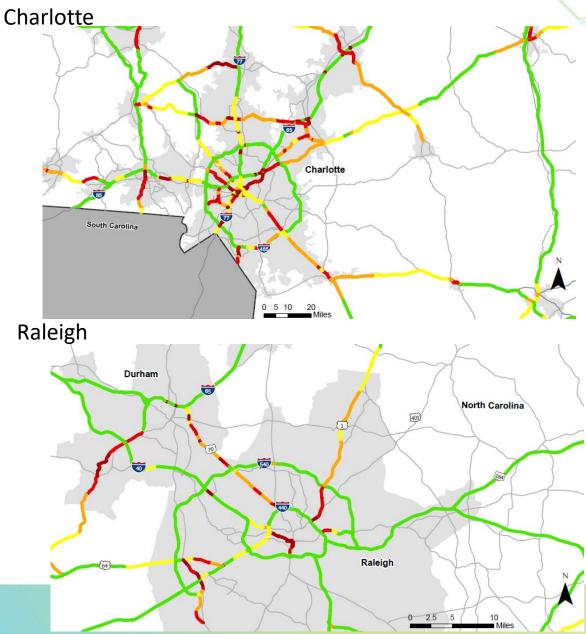
### NC Highway Performance AM Peak Hour on the Highway Freight Network (2019)



### NORTH CAROLINA Statewide Multimodal Freight Plan

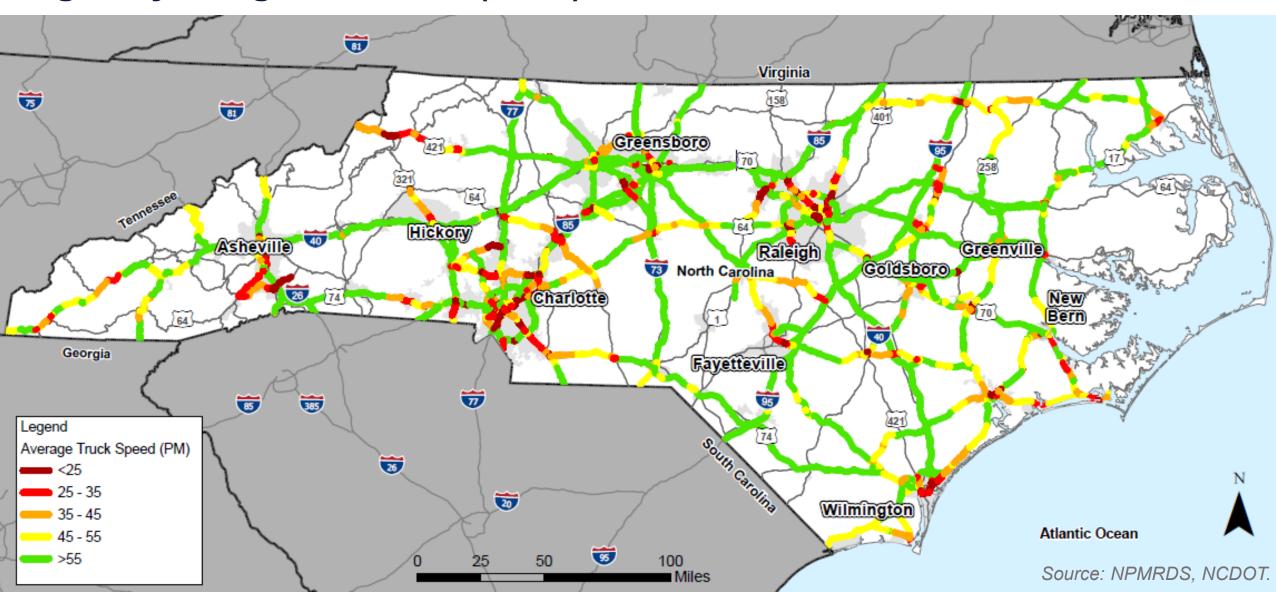
### NC Highway Performance AM Peak Hour on the Highway Freight Network (2019)





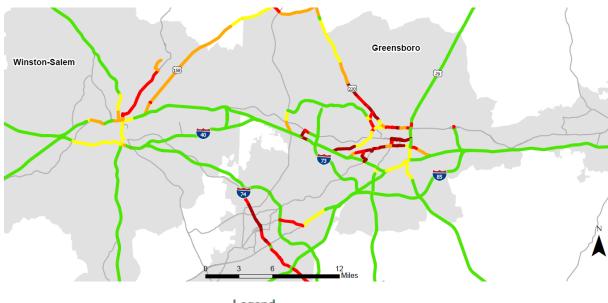
Source: NPMRDS, NCDOT.

### NC Highway Performance PM Peak Hour on the Highway Freight Network (2019)



### NC Highway Performance PM Peak Hour on the Highway Freight Network (2019)

### Greensboro



Legend

Average Truck Speed

<25

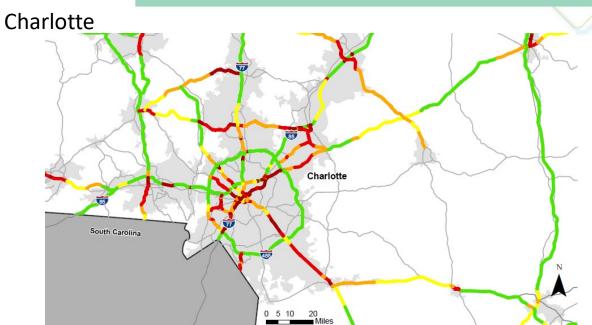
**25 - 35** 

**35 - 45** 

45 - 55

>55

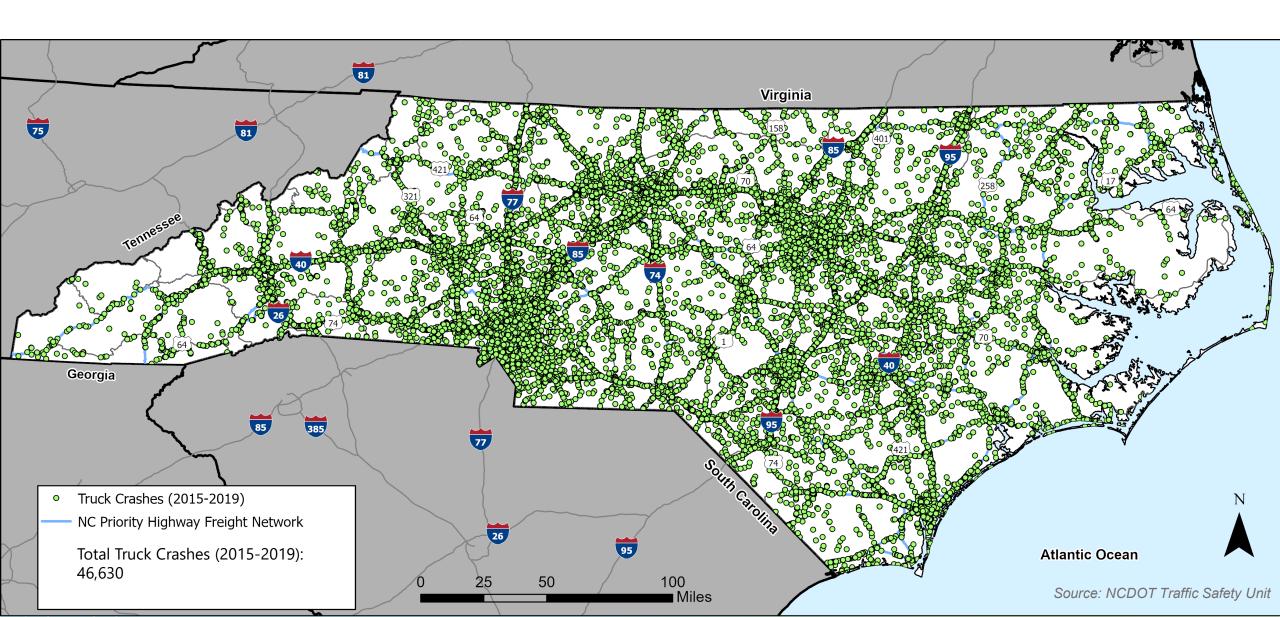
### NORTH CAROLINA Statewide Multimodal Freight Plan



### Raleigh

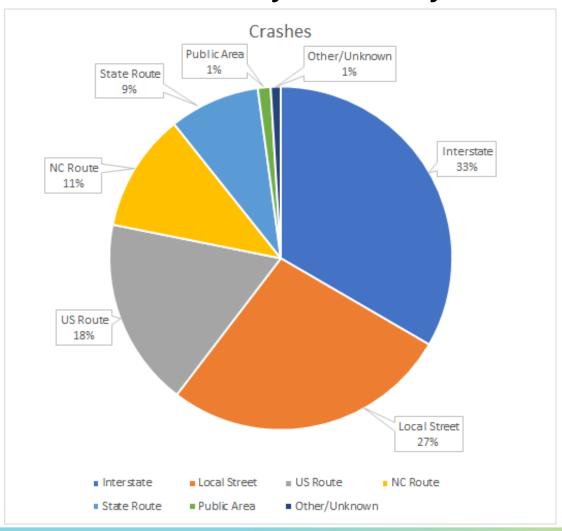


### **NC Safety - Total Truck Crashes**



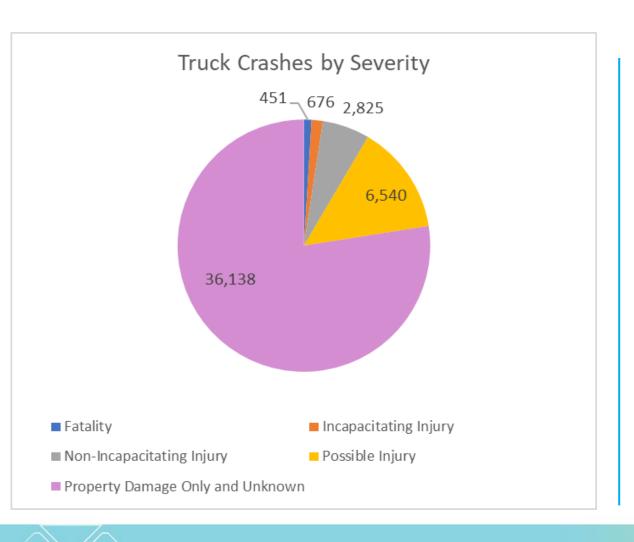
### **Safety**

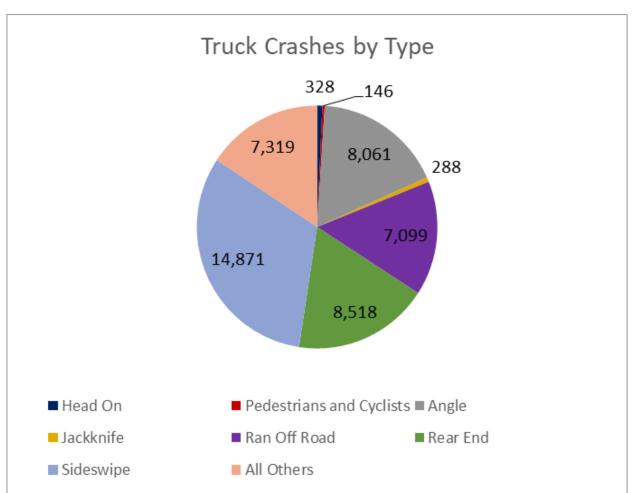
### Total Truck Crashes in NC by Roadway Class (2015-2019): 46,630



### **Safety**

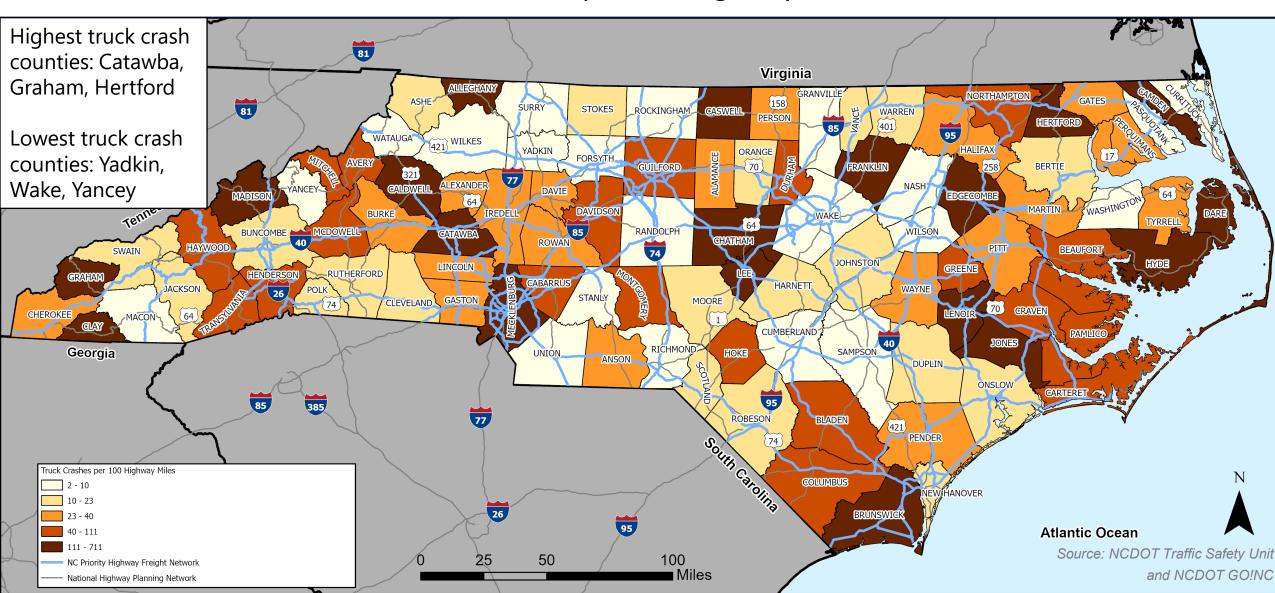
### Total Truck Crashes in North Carolina from 2015-2019: 46,630





## Safety - Total Truck Crashes (2015-2019)

### Truck crashes per 100 highway miles



## **Survey Question**

- 6. Please select your top three freight highway challenges in North Carolina:
  - Congestion (significant reduced travel speeds from posted conditions)
  - Reliability (ability to plan for a travel trip)
  - **Safety** (vehicle crashes)
  - Asset preservation (ability to maintain the freight infrastructure)
  - First and last mile connections (the beginning and end of the supply chain. These connections are often the most challenging for freight shippers)
  - Rural connectivity (ability to provide freight mobility and connectivity in less populated parts of the state)
  - Freight network design (geometrics, pavement design, bridge heights, etc.)
  - Truck parking (adequate safe and convenient parking for truck drivers)

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# North Carolina Truck Parking

### **NC Truck Parking Update**

Chapter 1 – Introduction

Chapter 2 – Stakeholder Outreach

Chapter 3 – Truck Parking Supply

Chapter 4 – Truck Parking Demand

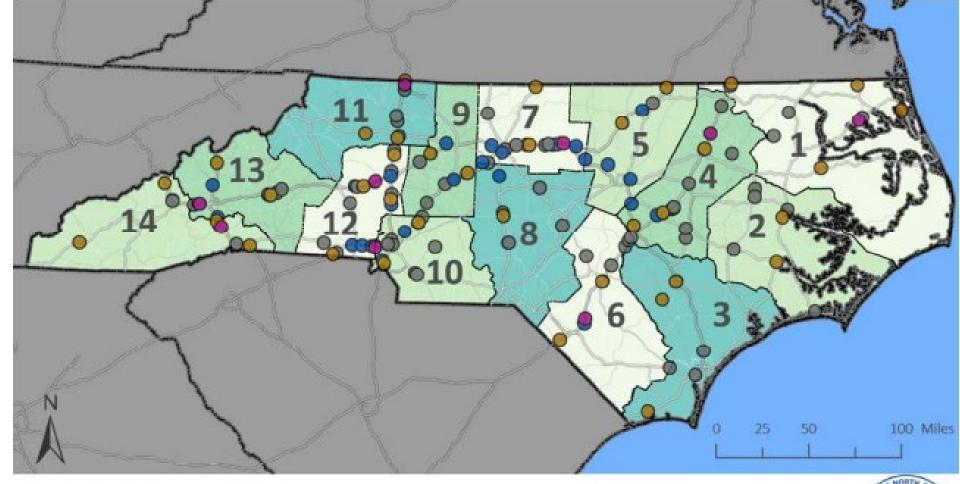
Chapter 5 – Truck Parking Facility Analysis



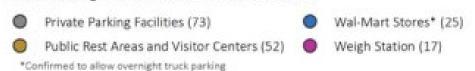
### **Truck Parking Inventory (2017)**

- In 2017, NC had 167
   parking locations
   representing nearly 4,800
   parking spaces.
- Approx. 59% are private and 41% are public; however, about 85% of the truck parking spaces are at privately run locations
- Truck parking utilization indicates that parking facilities along I-26, I-77, I-85, and most of I-95 are at capacity.
- Truck demand is projected to increase as freight volumes are forecast to grow by 43% by 2040.

### **Public and Private Truck Parking Locations by NCDOT Division**



Truck Parking Facilities and NCDOT Divisions

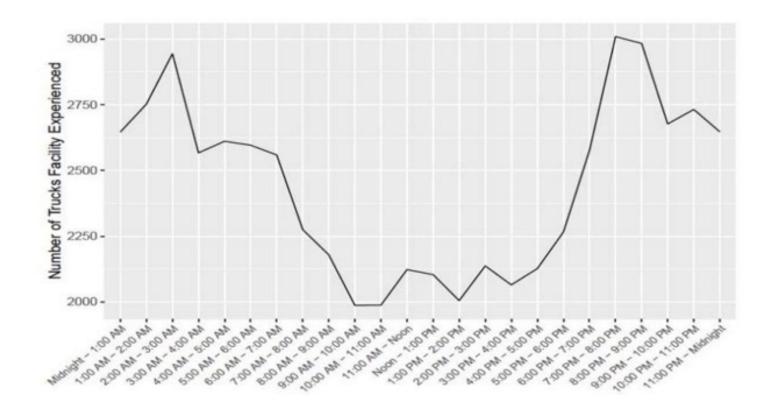




### NC Truck Parking Demand (2017)

Top truck parking locations per hour of day

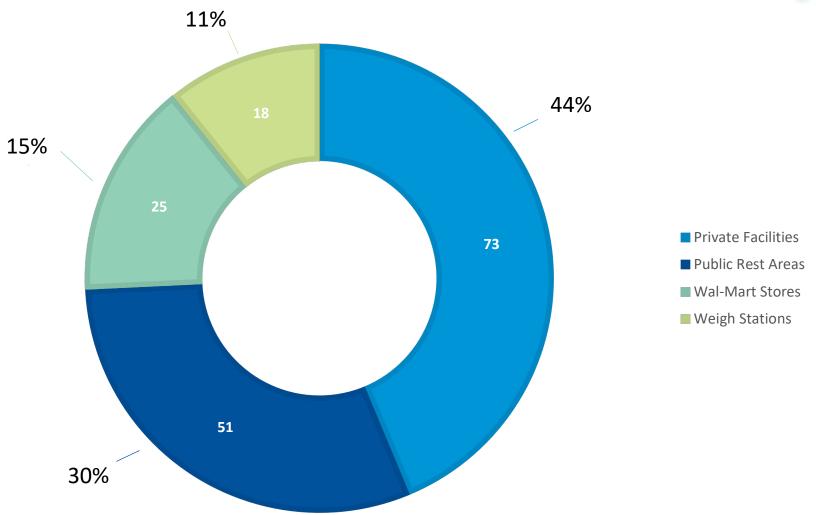
Highest total demand at designated sites is from 7-8 p.m. with a close second around 2-3 a.m.



## **NC Truck Parking Demand (2017)**

NC Truck Parking Facilities by type

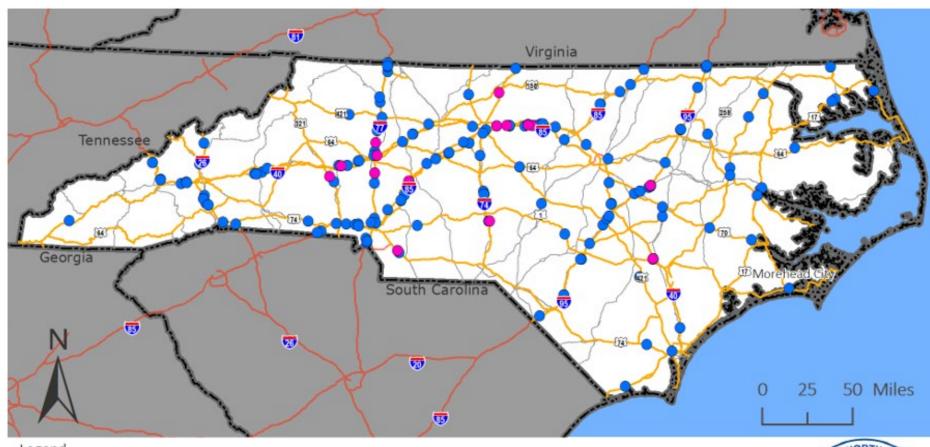
- 73 Private Facilities
- 51 Public Rest Areas
- 25 Wal-Mart Stores
- 18 Weight Stations
- 167 Total Truck Parking Facilities providing nearly 4,800 parking spaces



### **Truck Parking Inventory (2020)**

- By 2020, 14 new parking locations were added with 1,300 additional spaces
- Pilot/Flying J added the most capacity in the state (9 new locations) followed by Love's with four new locations and TA Greensboro with one new location.

#### **New Truck Parking Facility Locations**



Legend

- New Truck Parking Facility
- Old Truck Parking Facility
  - Corridors with Adjacent Truck Parking Space



## **Survey Question**

7. Are there any new truck parking locations that have come online since the 2017/2020 Truck Parking Plan? If so, where are they located.

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## **Survey Question**

8. What and where are truck parking needs and challenges?

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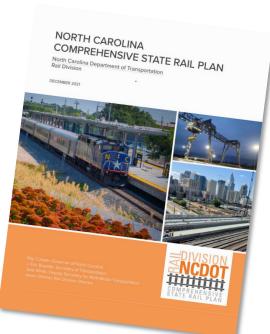


# North Carolina Rail

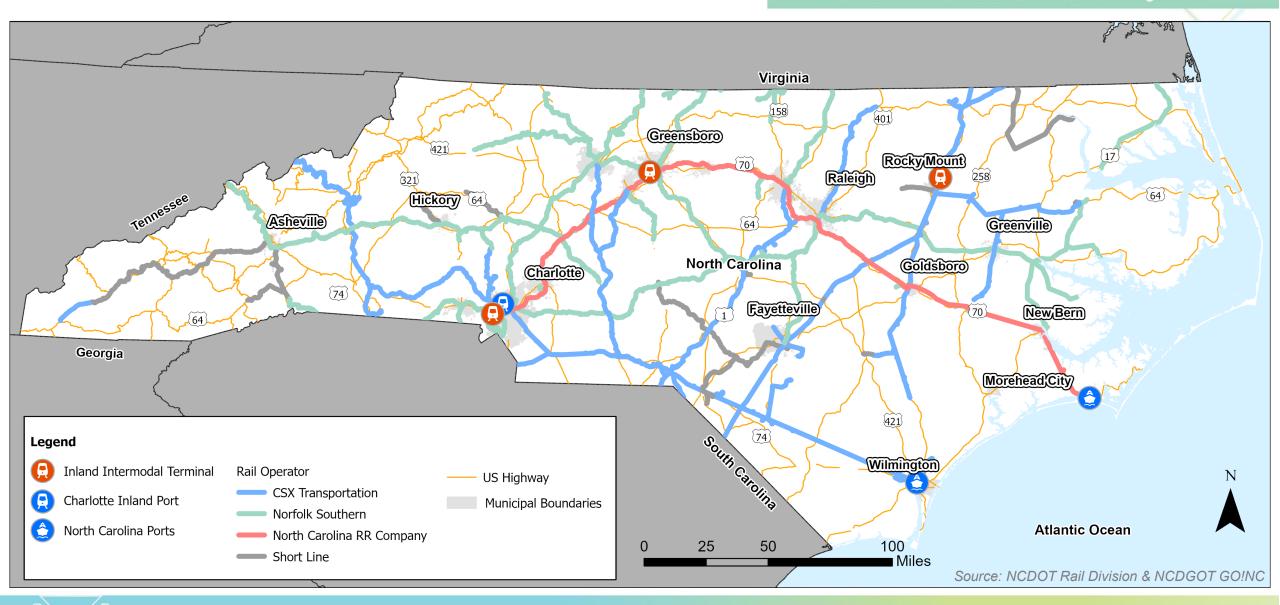
### **NC Proposed Freight Rail Improvements**

## Freight Rail Network goals and objectives based on the 2021 Draft State Rail Plan

- Provide Access to Freight Rail Users
- Improve Rail Safety
- Enhance the Resiliency of Rail Infrastructure
- Corridor-Level Approach for the Benefit of Entire Network
- Realize Economic Opportunities by Supporting Existing and Potential Rail-Served Markets, Industries, and Businesses



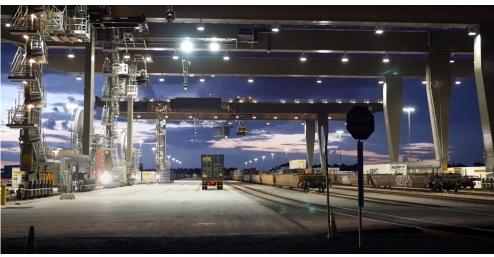
### **NC Freight Rail Network**



### North Carolina Intermodal Rail Terminals

- Carolina Connector Intermodal Terminal (Rocky Mount, NC)
  - Opened November 2021
  - 330 Acre Site
  - CSX Intermodal Service
  - Five miles off I-95 and 60 miles NE of Raleigh
  - Three fully automated zero-emission electric RMG cranes
  - Completely automated terminal
  - Wilmington Midwest Express





### North Carolina Intermodal Rail Terminals

### **Greensboro Terminal**

- 50-acre site
- Norfolk Southern Intermodal Service
- 24-hour-a-day availability
- Located near I-85
- Container yard adjacent to the ramp
- Neutral chassis pool
- Has top and bottom lift capabilities
- Target Market: furniture, lumber, paper, chemical, tobacco, etc.



### **Provide Access to Freight Rail Users**

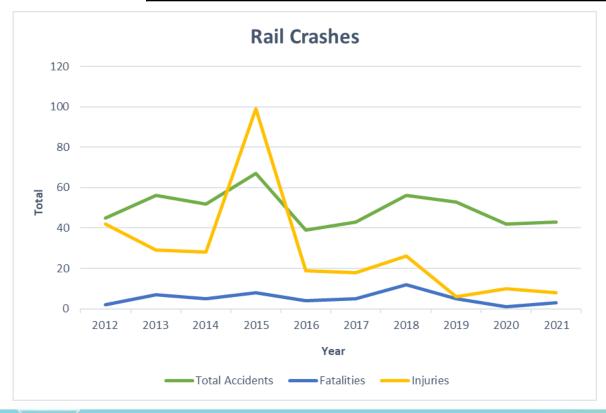
- Improve Road and Rail Connections at Freight Rail Facilities and Port Terminals
  - Intermodal Terminal Access Improvements
  - Short Line Access to Class I Network
- Expand and Improve On-Dock Rail Service
  - •Improvements to Intermodal facilities and capabilities
  - Expansion of port terminal capacity and capabilities
  - Moving cargo to inland ports



NC's intermodal facility – the CCX, opened in 2021

# Improving Rail Safety At-Grade Crossings

Highway-Rail Incidents	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	Total
<b>Total Accidents</b>	45	56	52	67	39	43	56	53	42	35	488
<b>Fatalities</b>	2	7	5	8	4	5	12	5	1	3	52
Injuries	42	29	28	99	19	18	26	6	10	8	285



- Mortality rate has improved 75% since 2018 to present (2021)
- Safety Improvements
  - Warning devices, rehabilitation, adoption of channelization
- Funding
  - NCDOT & FRRCSI SIAP, Section 130, and STI Program

# **Enhance the Resiliency** of Rail Infrastructure

- Network Redundancy: Reestablishment of the S-Line
- Military Readiness of Rail

## **Corridor-Level Approach**

- Complementary Highway Improvements
- Advancing the Southeast Corridor

## **Economic Opportunities**

- Promote Rail-Supportive and Rail-Compatible Uses
  - Megasites and Rail-Served Sites
  - Global TransPark (GTP) Improvements
- Acquire and Preserve Under-Utilized Freight Rail Corridors
- Leverage Public-Private Partnerships
  - Class I Investments
  - Short Line Investments

## **Survey Question**

- 9. Which of the following needs or challenges are most important to you?
  - Availability of direct rail service
  - Cost of railroad service
  - Infrastructure needs
  - Intermodal bulk and container transfer facilities
  - Multimodal Public and Private Partnerships
  - Other, please specify

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# North Carolina Air Cargo

### **NC Top Air Cargo Commodities**

- The top 5 in both tonnage and value are Pharmaceuticals,
- Machinery, Electronics, and Plastics/ Rubber
- Textiles/Leather are in top 5 in tonnage
- Precision instruments are in the top 5 in value

Commodity by Tonnage	Total Tons (Thousands)	% of Total
Machinery	54,960	19%
Electronics	37,550	13%
Textiles/Leather	33,232	12%
Pharmaceuticals	17,325	6%
Plastics/Rubber	15,936	6%
Commodity by Value	Total Value (Millions)	% of Total
Pharmaceuticals	5,268	21%
Electronics	4,963	20%
Machinery	4,335	18%
Precision Instruments	1,884	8%
Plastics/Rubber	1,124	5%



# 7 domestic destinations

# 3 international destinations

 London, Munich, Frankfurt

Airport	City	Total Tons (Thousands)	%
Memphis International	Memphis, TN	76,471	30%
Louisville International-Standiford Field	Louisville, KY	32,357	13%
Cincinnati/Northern Kentucky International	Cincinnati, OH	22,121	9%
Indianapolis International	Indianapolis, IN	18,744	7%
Philadelphia International	Philadelphia, PA	13,746	5%
London Heathrow	London, United Kingdom	8,260	3%
Munich Airport	Munich, Germany	7,234	3%
Hartsfield-Jackson Atlanta International	Atlanta, GA	7,133	3%
Ontario International	Ontario, CA	5,494	2%
Frankfurt Main	Frankfurt, Germany	3,862	2%
Other	-	-	23%

Source: FAF5.

### **NC Air Cargo Trends**

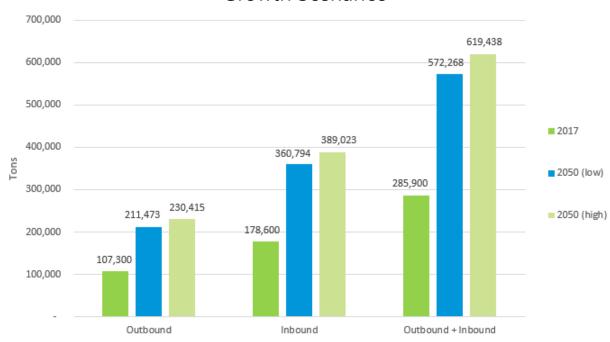
# Air Cargo close to doubling from 2017 to 2050 in value and tonnage

#### Value and Tonnage for 2017 & 2050 Growth Scenarios



# Similar growth for inbound and outbound tonnage

Inbound and Outbound Tonnage for 2017 & 2050 Growth Scenarios



## **Survey Question**

10. Which of the following air cargo needs or challenges are most important to you?

- Availability of air cargo service
- Cost of air cargo service
- Timeliness of air cargo service
- Improving air cargo infrastructure
- Adding more air cargo capacity
- Multimodal connectivity between the airport and rail, ports or highways
- Other, please specify

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# North Carolina Ports

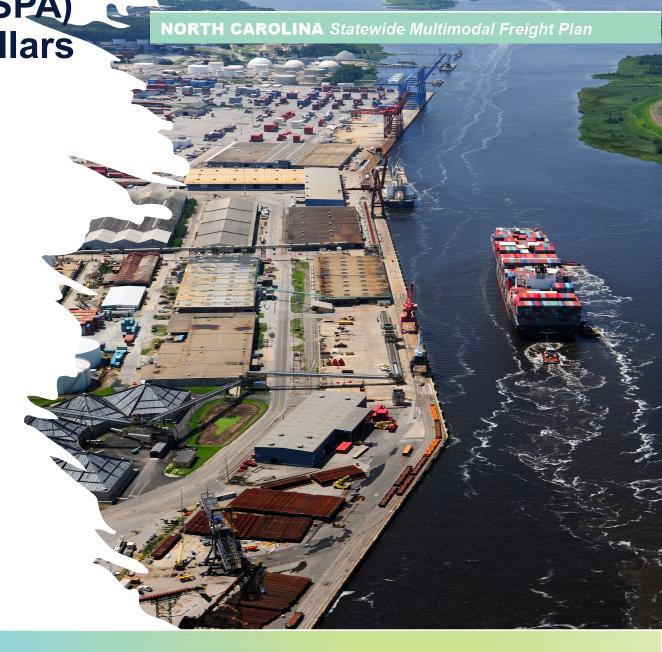
**2021 NC State Port Authority (NCSPA) Strategic Plan Core Values and Pillars** 

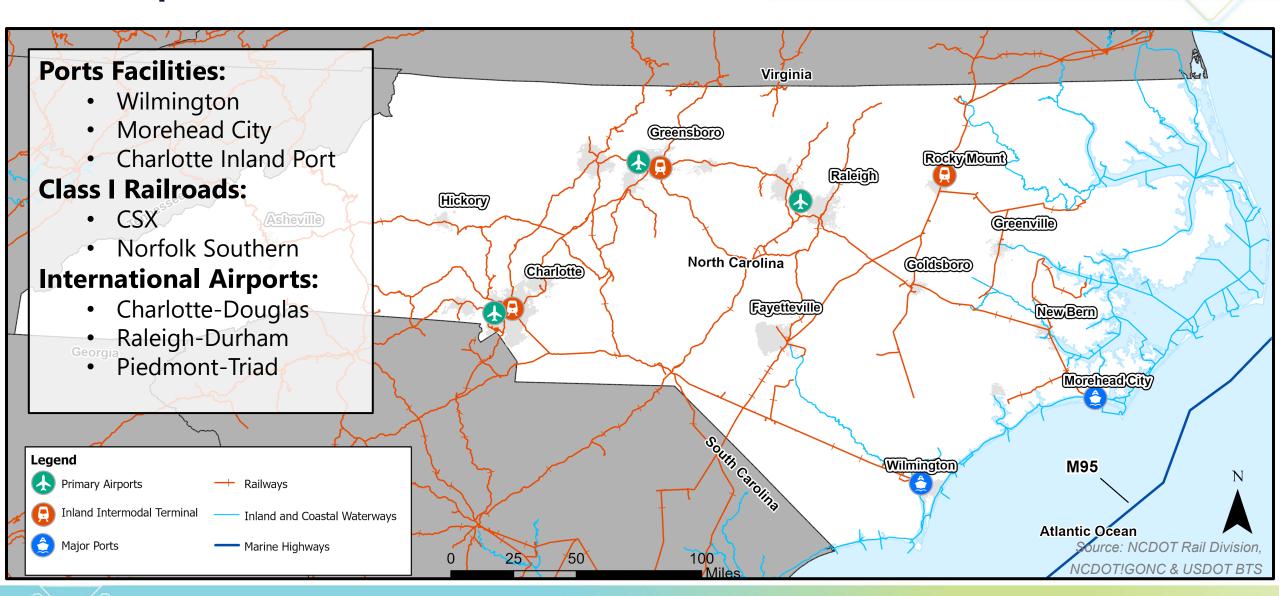
### **NCSPA Core Values:**

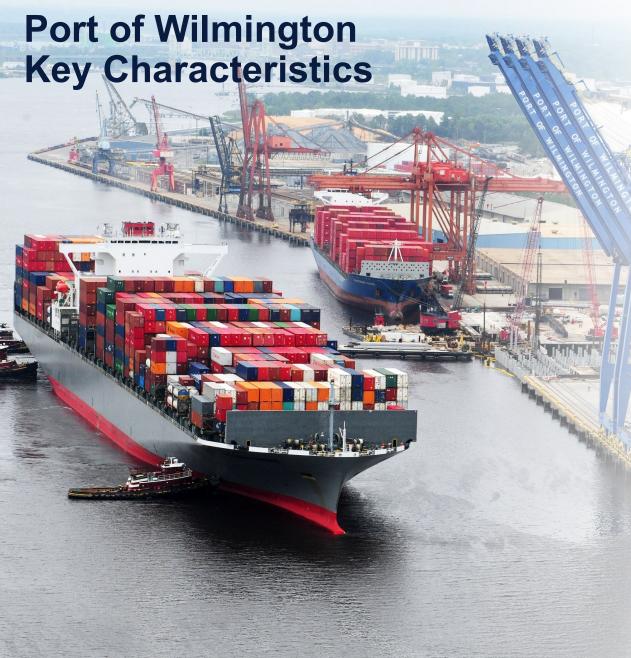
Safety, People, Integrity, Service

### **NCSPA Core Pillars:**

- Growth of Cargo Volumes
- Expand Global Coverage of Vessel Services
- Engage and Support State-wide Economic Development Projects
- Develop the Talent Pipeline







### **Key Advantages:**

- Port Terminal provides container, bulk, and breakbulk
- 284 Acre Facility
- Navigation Channel 42 ft (12.8M) + 4 ft tidal
- Accommodating 1,200+ft Length Overall (LOA) and
   158 ft Beam (Wide) vessels
- Channel Deepening to 47 ft
- Air Draft Clearance to 212 ft (64.6M)
- One million sq. ft. of covered storage
- 125 Acres of Open Storage
- Seven container cranes
- 760 Reefer Plugs
- On dock rail and Intermodal service
- Class I rail access provided by CSX
- NC Ports Employee Operated Terminal

## Port of Morehead City Key Characteristics

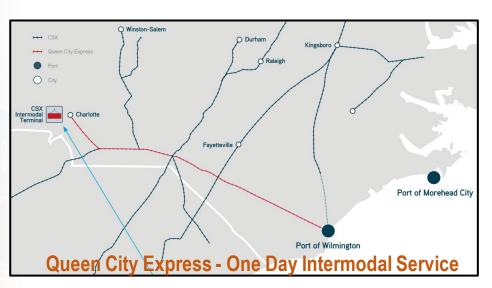
### **Key Advantages:**

- Port Terminal provides bulk, breakbulk, and Ro/Ro
- 128 Acres Terminal
- 150 Acres at Radio Island Terminal
- Navigation Channel 45 ft. deep
- 9 berths with 5,366 linear ft of bulkhead or wharf frontage
- More than 1 million sq. ft. of storage space
- Rail service provided by Norfolk Southern Railway
- On-Dock Rail Service
- Class 1 Rail provided by Norfolk Southern (NS)
- Within 700 miles of more than 70 % percent of the industrial base of the United States

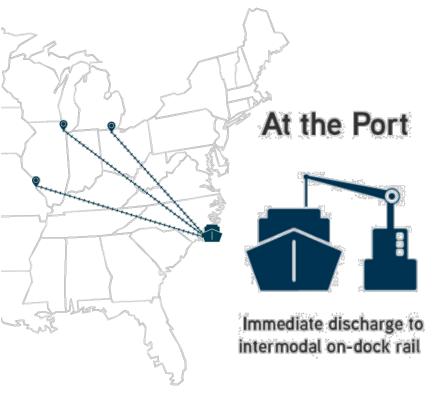


### **Key Advantages:**

- 20 Acres Terminal
- Accommodates 2,000 Grounded/Wheeled Containers.
- Serves as a staging area for empty and loaded containers with 24/7 access potential
- Serves I-85 and i-77 Corridors
- Onsite maintenance and repair services
- Shortens first and last mile truck transit
- Provides access to the southeastern United States
- Reduces the number of trucks on roadways



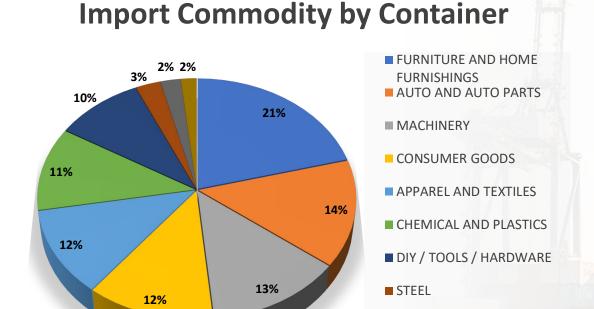
## Wilmington Midwest Express (CCX)



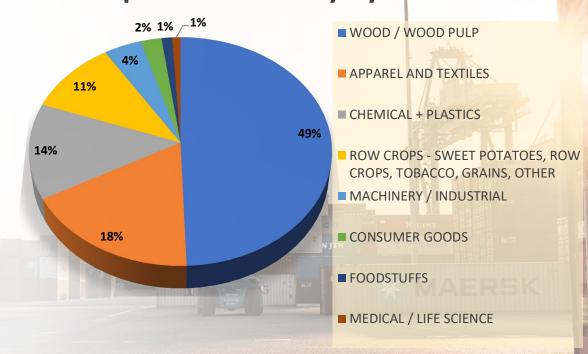
- Operated by CSX
- Competitive rates
- Efficient on-pot operation
- No rail dwell times
- The fastest ship-to-rail service on the East Coast



NORTH CAROLINA Statewide Multimodal Freight Plan



### **Export Commodity by Container**



**Import TEUs = 150,374** 

**Export TEUs = 145,901** 

■ MEDICAL / LIFE SCIENCE

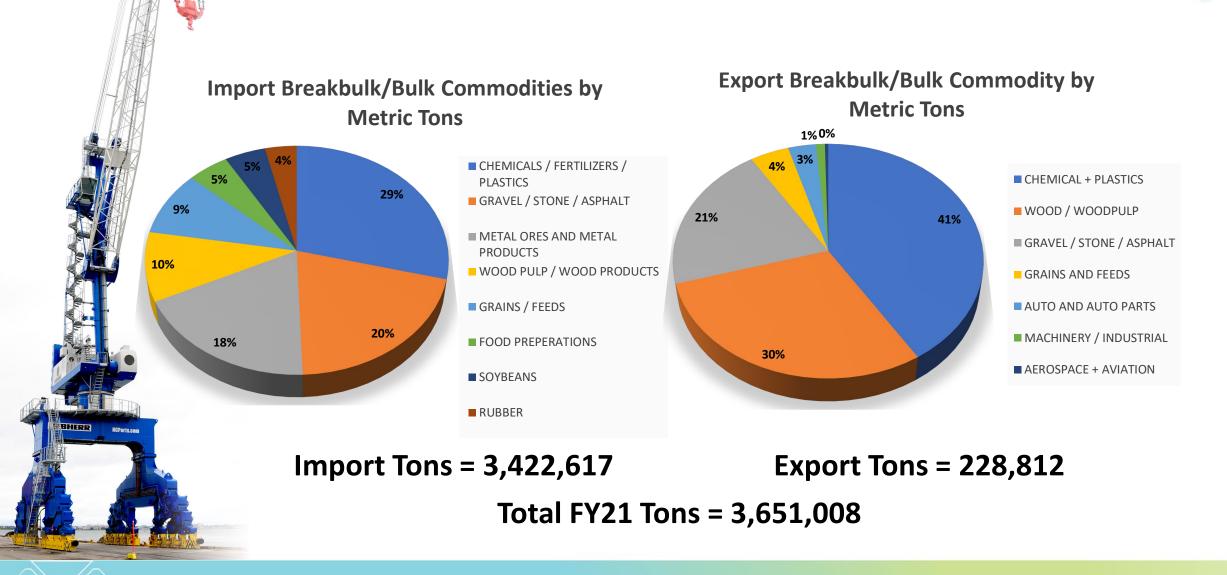
Total FY20/21 TEUs = 296,275

❖ Total Annual 2021 (Dec – Jan) was **307,511** and Terminal Total Capacity Now 1,200,000

APPLIANCES

❖ For reference purposes, on 1st November 2019, the Terminal Throughput and Terminal General Cargo Tonnage provided by Customer was 395,000 TEUs and 627,000 tons, respectively.

# NC Ports Authority – Top Breakbulk/Bulk Commodities (Imports and Exports)



### **Top Global Trading Regions**

International Origin Regions of Waterborne Imports to North Carolina (2017 and 2020, by tonnage)

#### **Imported to North Carolina via Out of State Ports**

- 1. Rest of Americas
- 2. Canada
- 3. Eastern Asia
- 4. Europe
- SW & Central Asia
- 6. SE Asia & Oceania
- 7. Mexico
- 8. Africa

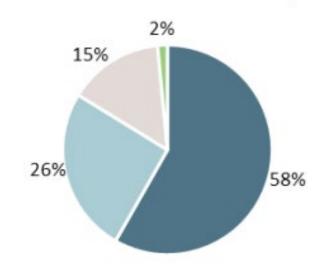
#### **Imported through North Carolina Ports**

- 1. Europe
- 2. Rest of Americas
- 3. SW & Central Asia
- 4. Eastern Asia
- 5. SE Asia & Oceania
- 6. Africa
- 7. Canada
- 8. Mexico

Source: FAF 5







■ TransPacific ■ TransAtlantic ■ North/South ■ Other

\*NC Ports has an additional new service that is not included in the table

# **Top 2017 Waterborne Commodities Imported to North Carolina**

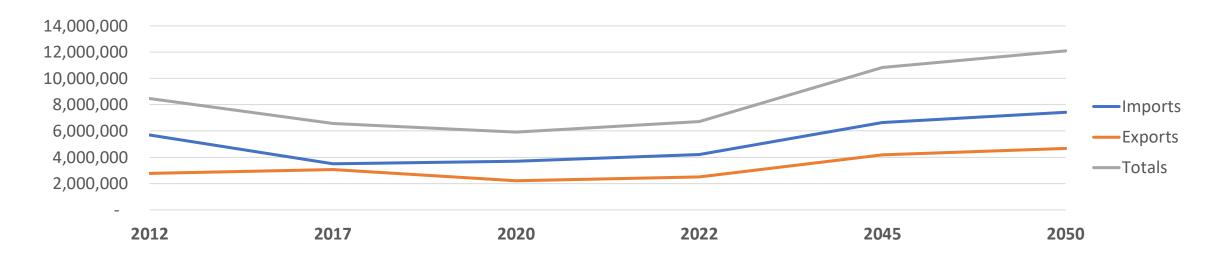
Imports	Total Tons in 2017	Total Tons in 2050	CAGR
Basic Chemicals	701,258	976,513	1.0%
Fertilizers	606,246	2,027,471	3.7%
Base Metals	533,460	851,18	1.4%
Cereal Grains	270,752	596,855	2.4%
Plastics/Rubber	219,972	478,008	2.4%
Nonmetallic Minerals	151,737	412,082	3.1%
Articles-Base Metal	140,077	220,357	1.4%
Fuel Oils	114,622	68,581	-1.5%
Gravel	108,676	260,179	2.7%
Machinery	101,731	267,913	3.0%
Overall Total	3,515,606	7,433,387	2.3%

### NC Statewide Maritime Trade Commodities – 2017 Top Exports

Exports	Total Tons in 2017	Total Tons in 2050	CAGR
Wood Products	1,036,874	1,779,139	1.6%
Fertilizers	528,915	475,123	-0.3%
Newsprint/Paper	445,965	845,828	2.0%
Logs	351,588	486,558	1.0%
Textiles/Leather	111,754	187,263	1.6%
Waste/Scrap	90,662	67,847	-0.9%
Agricultural Products	86,929	92,432	0.2%
Meat/Seafood	80,419	29,197	-3.0%
Fuel Oils	60,349	72,633	0.6%
Plastics/Rubber	55,641	219,886	4.3%
Overall Total	3,075,937	4,668,767	1.3%

## Waterborne Imports and Exports in North Carolina, 2012-2050

Direction	2012	2017	2020	2022	2045	2050	CAGR (2050/2017)
Imports	5,697,933	3,506,751	3,693,020	4,209,096	6,645,903	7,433,388	2.30%
Exports	2,779,226	3,075,937	2,213,841	2,510,599	4,180,544	4,668,767	1.27%
Totals	8,477,160	6,582,688	5,906,861	6,719,694	10,826,447	12,102,155	1.83%



## **Share of NC Destined Products From Out of State Ports**

States	Imports Destined for NC via	Exports from NC via
North Carolina	18%	80%*
South Carolina	19%	7%
Florida	28%	5%
Virginia	9%	2%
West Virginia	0%	1%
Kentucky	0%	.9%

<sup>\*</sup>From 2012 FAF4 Analysis to FAF5 2020 Exports out of NC Ports versus neighboring Port increased from 0% to close to 80% - Additional Analysis to confirm this increase may be considered

## **Survey Question**

### 11. What port needs or challenges are most important to you?

- Port waterway related projects
- Port roadway or highway connectors
- Port railroad related connection or projects
- Funding and grant programs
- Cargo distribution
- Freight related technologies
- Other, please specify

Website: Publicinput.com/FAC22

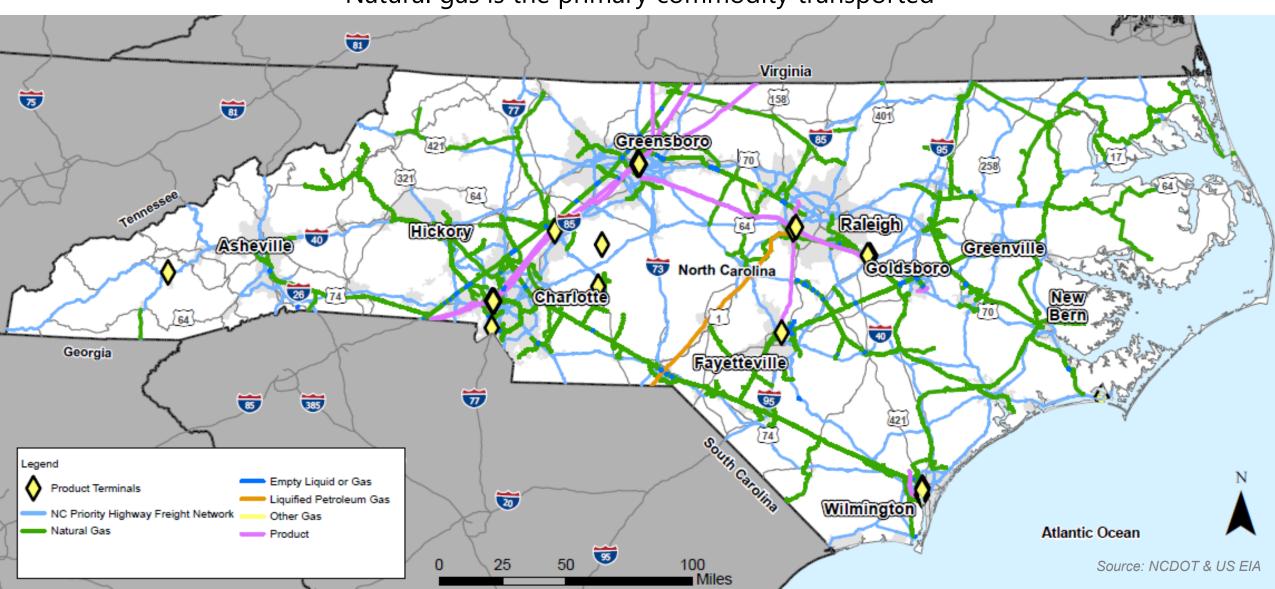
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## North Carolina Hazardous Materials

### **NC Pipelines**

Natural gas is the primary commodity transported



## **Survey Question**

- 12. What pipeline cargo needs or challenges are most important to you?
  - Permitting processes
  - Regulatory
  - Funding programs
  - State government support
  - Federal government support
  - Other, please specify

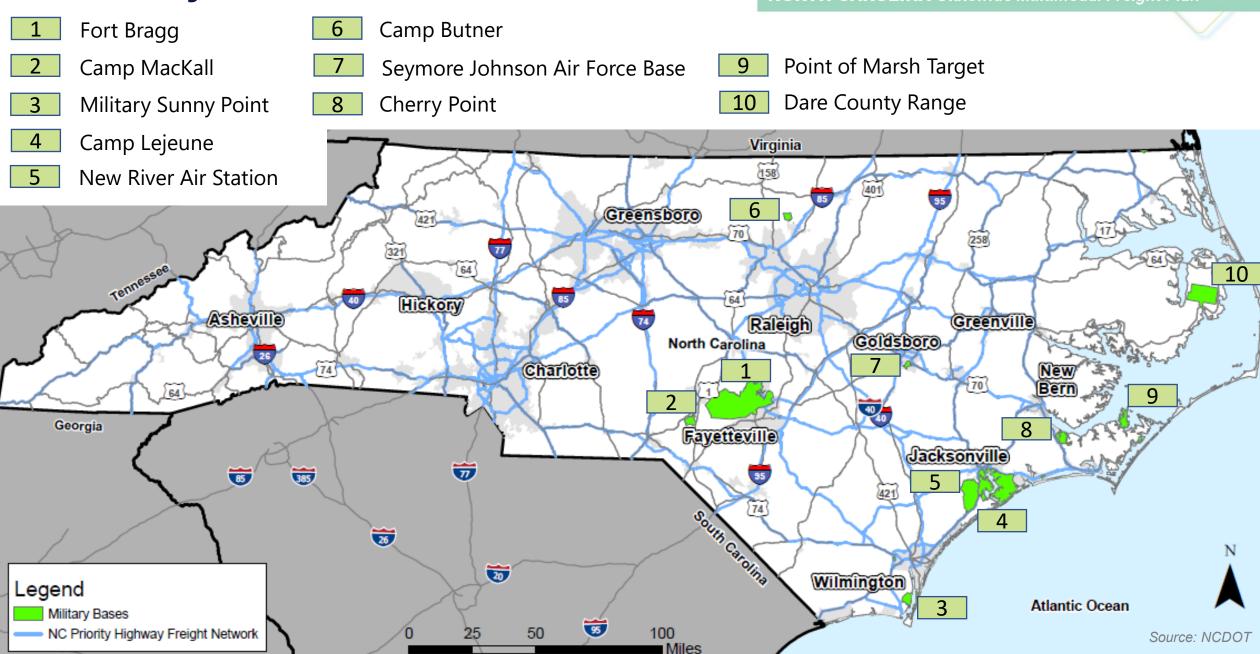
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## North Carolina Military

### **NC Military Base Locations**





## **Next Steps**

### **Schedule and Next Steps**

Task	2021					20	)22							
	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	ОСТ	NOV	DEC
Notice to Proceed														
Kickoff Meeting		*												
State Freight Network Assessment														
Stakeholder Meetings														
Freight Advisory Committee					*									
Supply Chain and Logistics Profile														
Freight Advisory Committee						*								
Review of Analysis Results; Development of Goals														
Freight Advisory Committee								*						
Development of Stategies and Prioritization to Achieve Goals														
Truck Parking Study Update														
Draft Report														
FHWA Review 1														
Public Comment Period														
Board of Transportation Review														
Finalize Document														
Board of Transportation Adoption														
FHWA Review 2														
FHWA Approval														
Training						<b>+</b>								
★ Meeting														

#### **Next Steps**

- Stakeholder Engagement
- Needs Assessment
- Goal Strategies and

Prioritization

- Truck Parking Update
- June FAC Meeting



# Any Other Questions or Comments?

### **Thank You!**

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