



NORTH CAROLINA

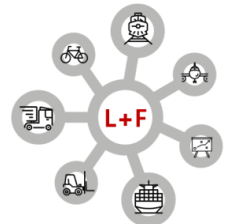
Department of Transportation



UPPER COASTAL PLAIN
RURAL PLANNING ORGANIZATION

Upper Coastal Plain RPO Technical Coordinating Committee

Dana Magliola
Office of Logistics + Freight, NCDOT
3 March 2020





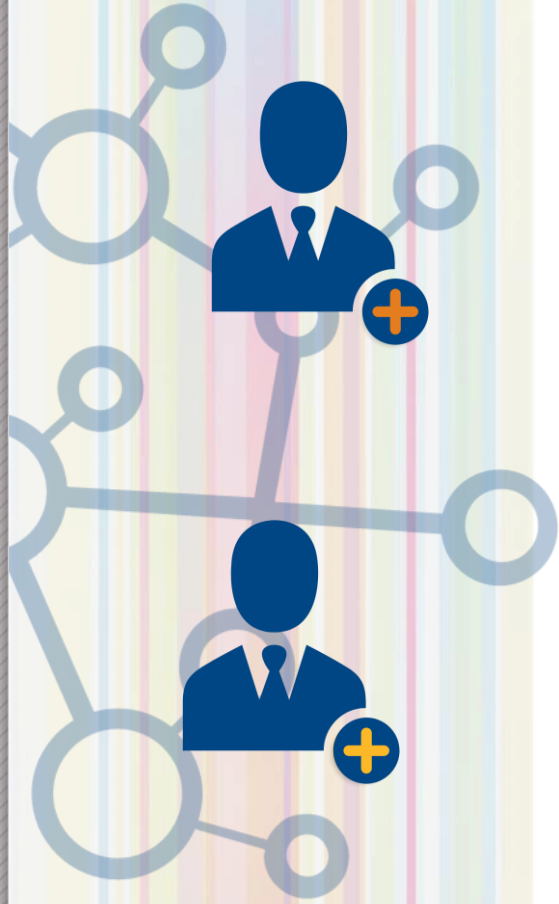
"Those DOTs that focus on older models will be unprepared to serve new kinds of demand."

McKinsey & Company - October 2017

"Data is the new oil."

The Economist - May 2017

Introduction+



Dana Magliola, Sr. Supply Chain Analyst
*BA, University of Virginia**
MBA, NC State University



Ahmed Zahrani, HBCU Fellow
Georgetown University
BS, MS, North Carolina A&T State University



*2019 NCAA National Champions

- Drive North Carolina's development as the preeminent environment for freight transport + logistics services
- Promote understanding and facilitate freight + logistics activities throughout the state
- Resource project delivery from planning to construction, ensuring infrastructure investment is connected to industry + commerce
- Support the economic + social well-being of all North Carolinians





DEFENSE ALLIANCE 
OF NORTH CAROLINA
Supporting NC's Military, Business, & Academic Community



NORTH CAROLINA
DEPARTMENT of
COMMERCE



ECONOMIC DEVELOPMENT
PARTNERSHIP OF NORTH CAROLINA



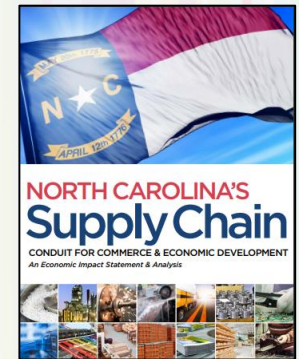
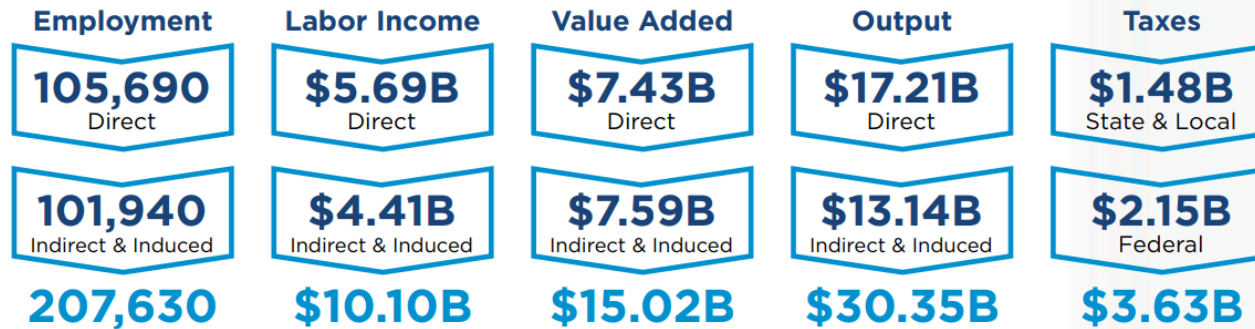
All the Stakeholders!

- Logistics + freight professionals in NC
- Supply chain, transportation, trade organizations in NC
- NCDOT leadership + colleagues
- Planners (MPO, RPO, Tribal, Municipal)
- Project Managers + Project Delivery Organizations within NCDOT
- Manufacturers + supply chain management organizations
- Economic development organizations + Chambers of Commerce
- Community, equity, sustainability + environmental advocates
- Dept. of Defense + emergency response organizations
- Other state government agencies
- Neighboring states' DOTs
- and YOU



- Logistics + freight is an important part of the North Carolina's economy:

TOTAL ECONOMIC IMPACT OF THE SECTOR



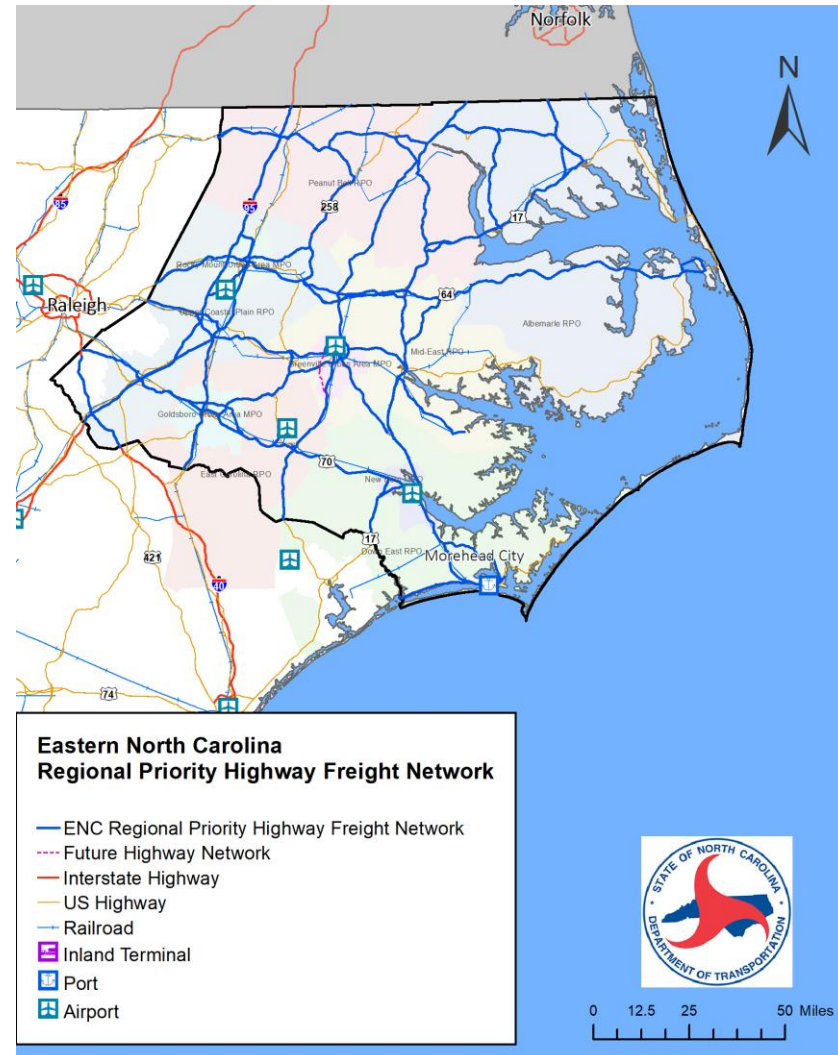
- Recognizing freight + logistics planning and transportation investment requires a nuanced and informed approach
- Leverages a network of logistics + freight *liaisons* from across the NCDOT organization to amplify impact and multiply capabilities
- Core group of full-time logistics + freight professionals as dedicated resource to NCDOT and NCDOT stakeholders

Eastern North Carolina Regional Freight Mobility Plan



Regional Goods Movement Profile

- 187M+ tons of annual cargo
94% by truck (87% by value)
- Railroad: 3 classification yards,
340+ at-grade rail crossings, CSX
A-Line (17-29/day)
- Port access to MHC, Wilmington,
Norfolk
- Industrial air cargo active at KRWI
+ KISO
- Robust pipeline + fuel
infrastructure



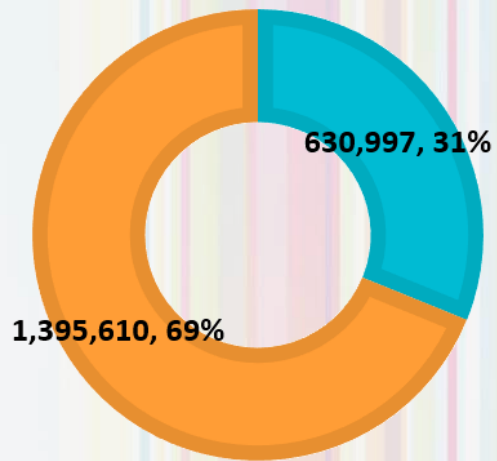
Regional Goods Movement Profile

Key freight producing industries include:

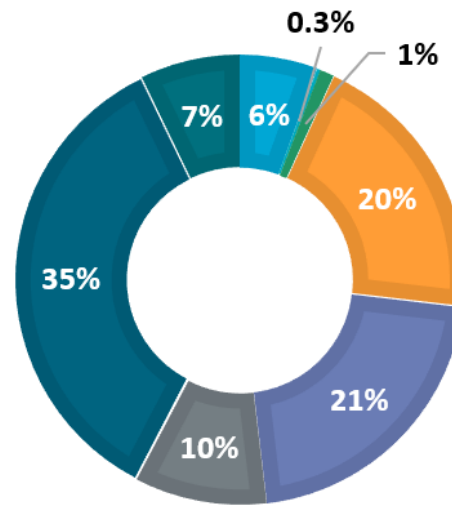
- Aerospace + Aviation
- Agriculture, Food Processing + Distribution
- Automotive, Truck + Heavy Equipment Manufacturing
- Biotechnology + life sciences manufacturing
- Chemicals, Rubber + Plastics
- Forestry + Wood Products
- Military + Defense
- Consumer Goods Distribution + Logistics



2017 Employment by Industry Breakdown

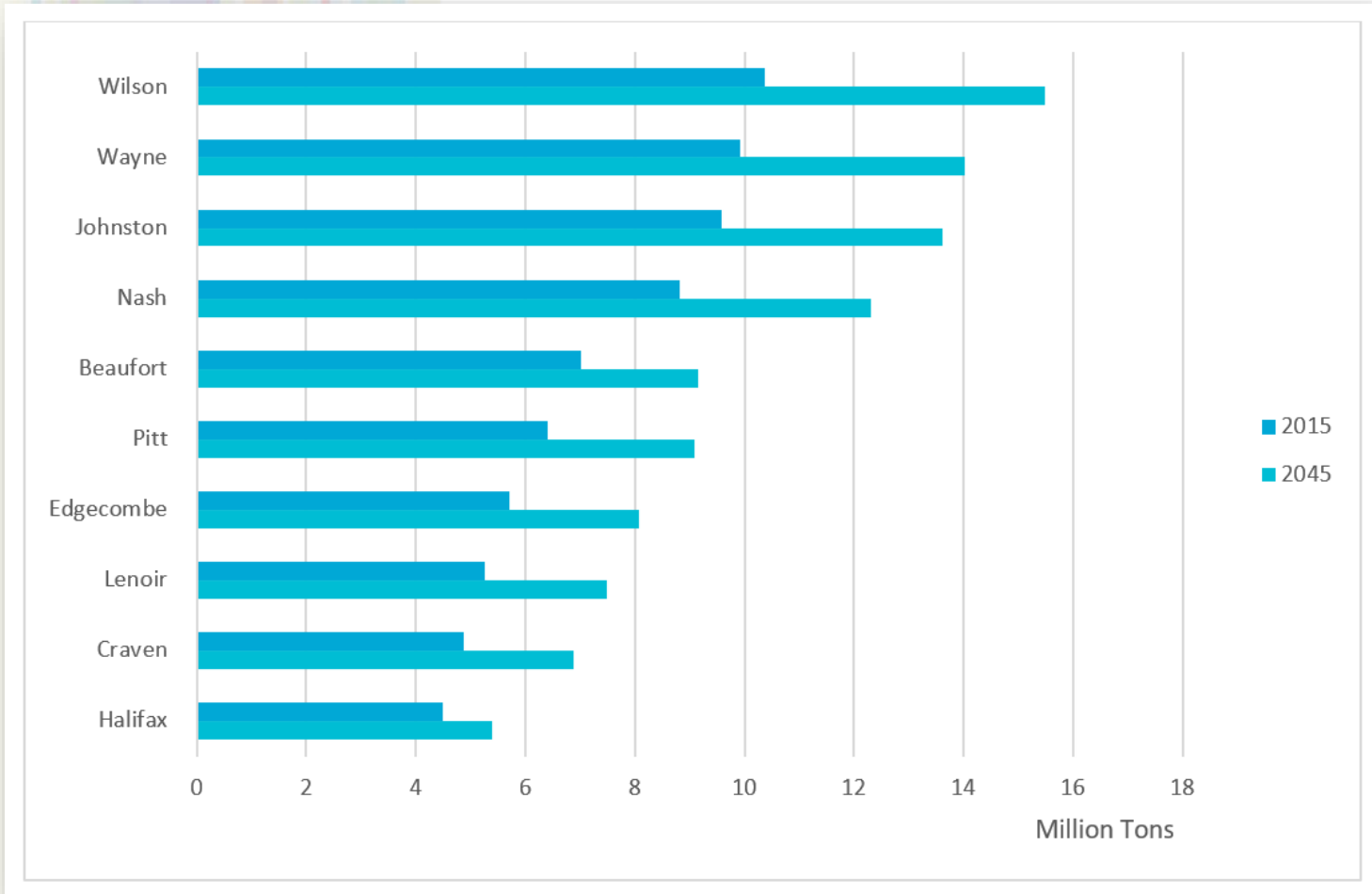


- Freight-Intensive Industry Sectors
- Service Industry Sectors



- Agriculture, Forestry, Fishing and Hunting
- Mining, quarrying, and oil and gas extraction
- Utilities
- Construction
- Manufacturing
- Wholesale trade
- Retail trade
- Transportation and warehousing

2015 + 2045 Cargo Volumes by Weight



Key Site Selection Factors

Labor Force

- Availability of skilled labor
- Labor costs
- Training programs/ technical colleges
- Availability of unskilled labor

Land

- Available buildings
- Occupancy / construction costs
- Available land

Business Climate

- Corporate tax rate
- Tax exemptions
- State/local incentives
- Low union profile
- Right-to-work state
- Environmental regulations
- Expedited permitting
- Availability of long-term financing

Supporting Infrastructure

- Highway access
- Energy availability/ cost
- Access to major airport
- Water availability
- Availability of ICT* services
- Railroad service
- Proximity to innovation/ R&D centers
- Waterway/ port access

Quality of Life

- Quality of life

Supply Chain

- Proximity to suppliers
- Proximity to major markets
- Inbound/ outbound shipping costs
- Raw materials availability

Logistics + Freight SWOT

Strengths

- Available land at a competitive price
- Labor availability (high unemployment, low-cost, area connection to military personnel)
- Many freight-dependent industries' growth rates are higher than national and state rates
- Access to I-95, U.S. 64, U.S. 264, U.S. 70
- Access to Class I and Short Line railroads
- Access to in-state and out-of-state Ports including Norfolk, Charleston, and Wilmington/Morehead City Ports

Weaknesses

- Available labor is unskilled and unreliable
- Low-skilled job availability has not recovered to pre-recession levels
- Lack of broadband infrastructure in rural areas
- Lack of connectivity to natural gas
- Traffic congestion at the Port of Morehead City during peak tourist season and large train movements
- Population decline and poor health among rural populations

Opportunities

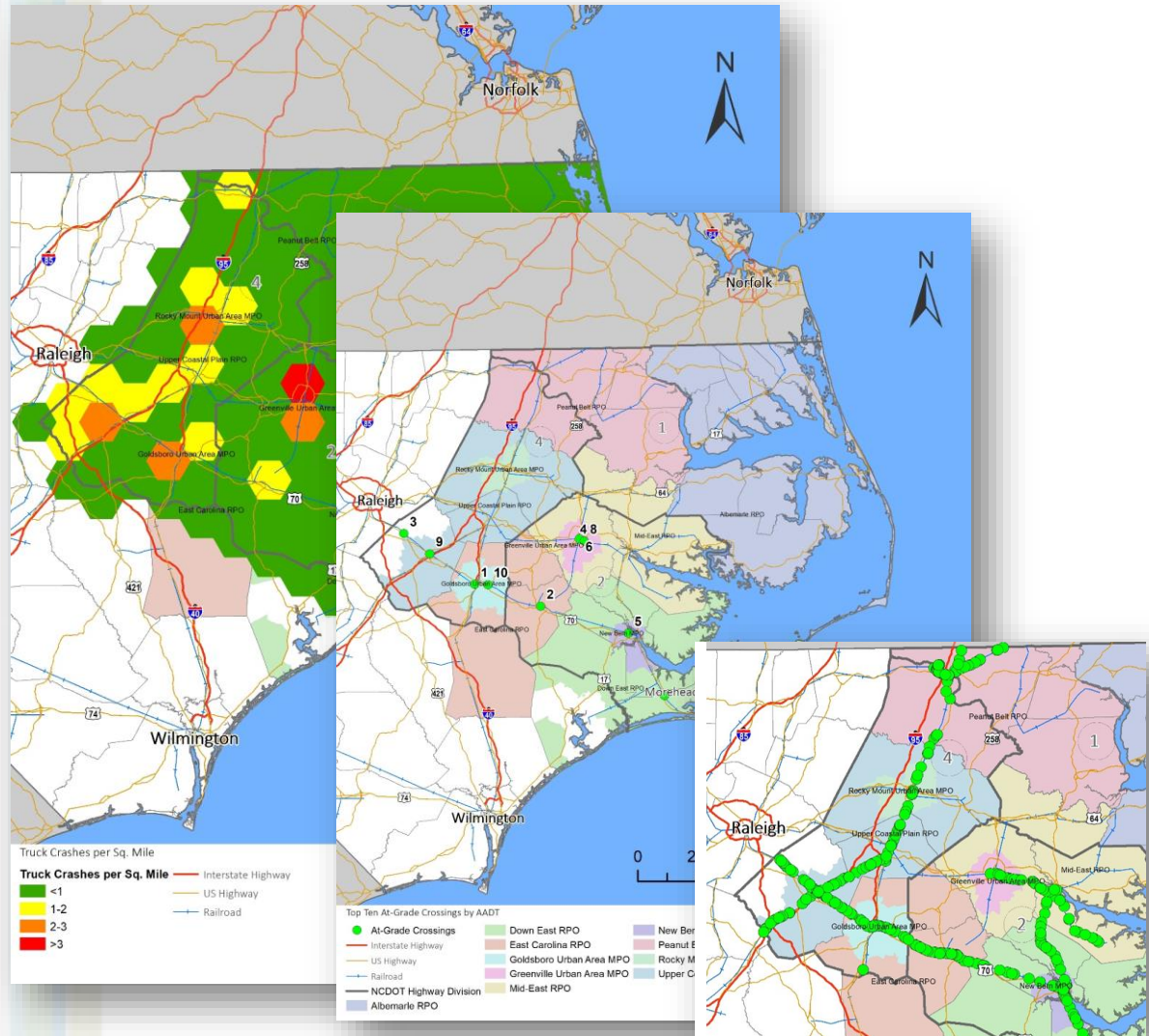
- Low cost of land, labor, and living
- Research capabilities
- Clean energy industry opportunities
- New Port equipment and warehouses
- Further development on Radio Island
- Short line railroads acquiring Class I branch lines
- Future Interstate, Direct Rail Access, and Airport Access
 - New Raleigh-Norfolk Corridor
 - Future Interstate 795, 587, and 42
 - CCX terminal in Rocky Mount

Threats

- Natural disasters (flood zones and super storms are frequent in the area)
- Trade and immigration regulations
- Transportation needs exceeding current funding levels
- Dredging issues at NC Ports
- Inconsistencies in political champion supporting freight industries and development
- Class I railroads divesting branch lines to short lines

Regional Goods Movement Profile

- Safety remains a key concern
- Truck related crashes
- At-grade railroad crossings



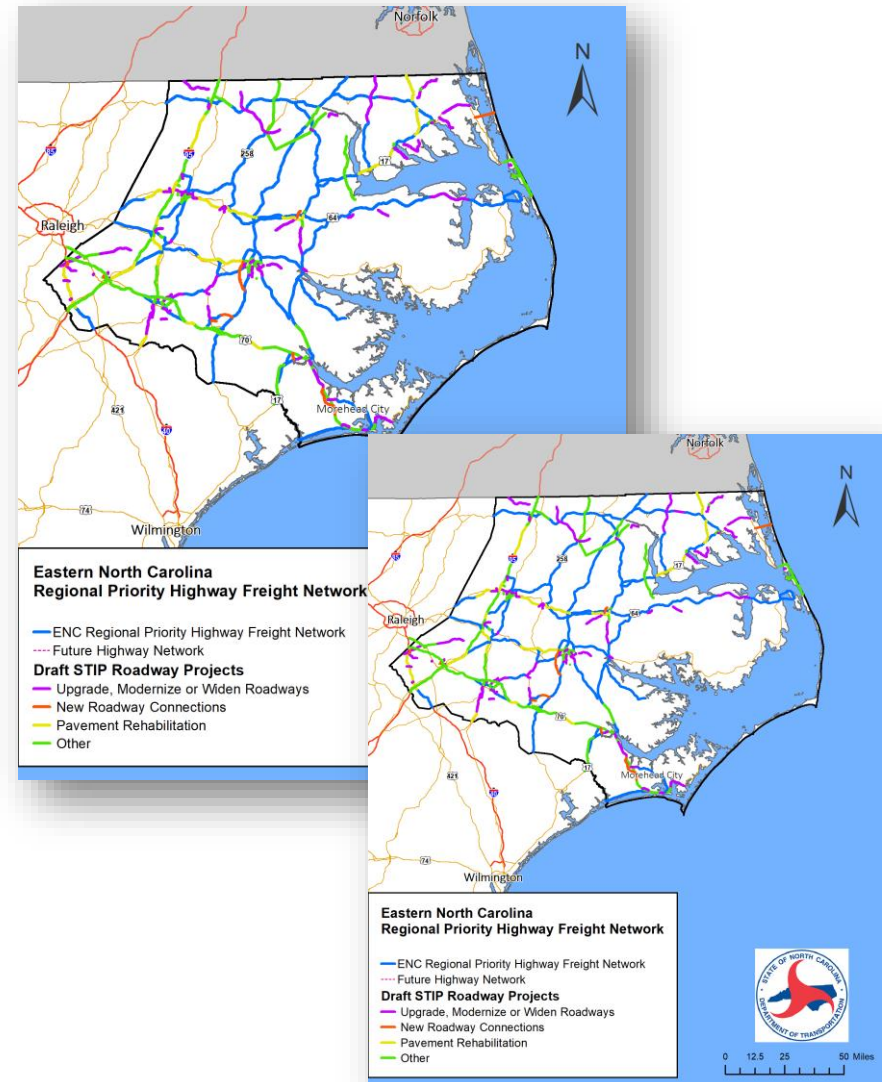
Key Relevant Trends

- Intermodal cargo growth leveraging railroads + highway networks
- Increasing volumes through MHC + Port of Wilmington (+ Norfolk)
- Protein production + global demand on rise
- CSX's Carolina Connector →

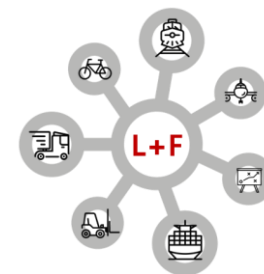


Recommendations

- Address safety issues prevalent in both urban + rural environments
- Improve rural highways for economic competitiveness
- Increase truck parking availability
- Maintain truck travel time reliability
- Improve access to key freight mobility assets
- Support regional industry supply chain growth
- Continue to invest in intermodal freight solutions



Bottlenecks + Congestion Costs



Office of Logistics + Freight Resources

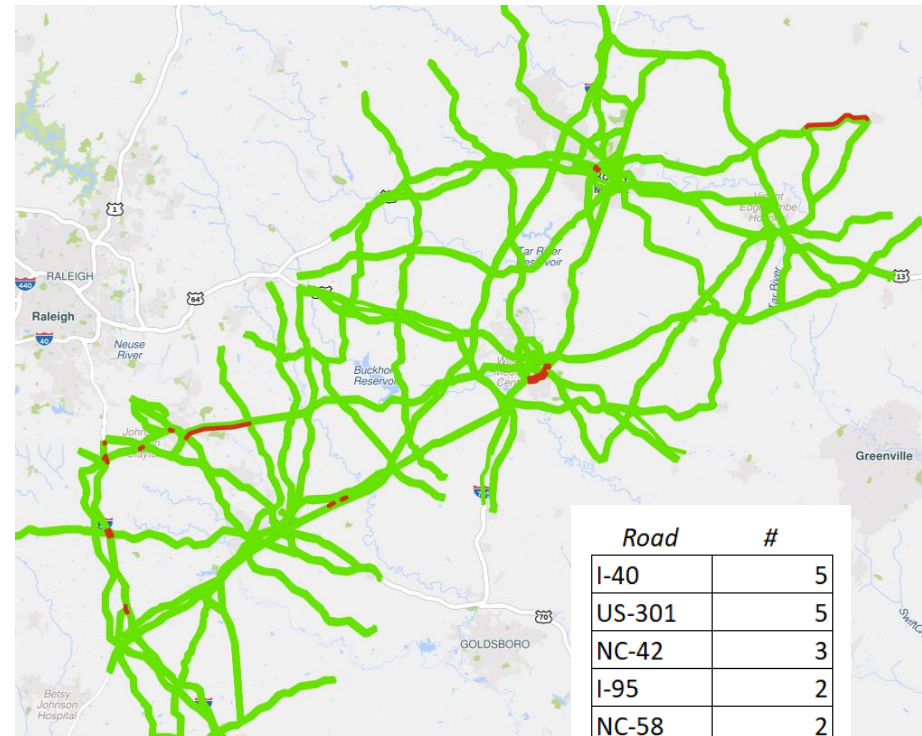
- User Delay Costs →
Commercial congestion on the North Carolina Priority Freight Highway Network cost the North Carolina economy nearly **\$150M** in 2019

Performance Measure	Sep-19	Oct-19	% CHANGE	Nov-19	% CHANGE	Dec-19	% CHANGE	Jan-20	% CHANGE
Freight Network Travel Time Index (weekday)	0.94	1.04	10.6%	1.03	-1.0%	1.01	-1.9%	1.00	-1.0%
NCPFN System Total Cost of Delay	\$ 11,604,314	\$ 13,241,069	14.1%	\$ 11,770,122	-11.1%	\$ 10,450,991	-11.2%	\$ 10,730,645	2.7%
NCPFN System Average Daily Total Cost of Delay	\$ 386,810	\$ 427,131	10.4%	\$ 392,337	-8.1%	\$ 337,129	-14.1%	\$ 346,150	2.7%
NCPFN System Average Daily Cost per VMT	\$ 0.21	\$ 0.24	14.3%	\$ 0.22	-8.3%	\$ 0.19	-13.6%	\$ 0.16	-15.8%
Average Truck % of Congested Volume	16.05%	16.11%	0.4%	16.09%	-0.1%	16.38%	1.8%	15.98%	-2.4%
Truck Peak Hour	5pm	5pm	-	5pm	-	5pm	-	5pm	-
Truck Peak Hour Cost per VMT	\$ 0.50	\$ 0.55	10.0%	\$ 0.51	-7.3%	\$ 0.46	-9.8%	\$ 0.39	-15.2%
Top 10 Bottlenecks Total Cost of Delay	\$ 476,713	\$ 607,090	27.3%	\$ 470,530	-22.5%	\$ 358,754	-23.8%	\$ 342,065	-4.7%
Top 10 Bottlenecks % of Total Cost	4.11%	4.58%	11.6%	4.00%	-12.8%	3.43%	-14.1%	3.19%	-7.1%
Top 10 Bottlenecks Average Daily Total Cost of Delay	\$ 15,890	\$ 19,584	23.2%	\$ 15,684	-19.9%	\$ 11,573	-26.2%	\$ 11,034	-4.7%
Top 10 Bottlenecks Average Daily Cost per VMT	\$ 0.58	\$ 0.74	27.6%	\$ 0.76	2.7%	\$ 0.48	-36.8%	\$ 0.53	10.4%
Top 10 Bottlenecks Truck % of All Delay	15.47%	12.78%	-17.4%	15.28%	19.6%	10.61%	-30.6%	10.84%	2.2%

Bottlenecks

• 2020 Bottlenecks include:

I-40 E @ NC-210/EXIT 319
 US-301 N @ NC-58/LIPSCOMB RD E
 NC-97 W @ US-258
 I-95 S @ MAIN ST/EXIT 102
 NC-58 S @ US-264-ALT/US-301/WARD BLVD/NASH ST
 NC-42 W @ I-40/JAMES E HARRINGTON FWY
 US-301 S @ US-264-ALT/NC-58/NC-91/MLK JR PKY
 US-70-BR W @ NC-42/BARBOUR ST/S LOMBARD ST
 NC-58 N @ US-301/LIPSCOMB RD E
 NC-42 E @ US-70
 I-40 E @ NC-242/EXIT 325
 US-301-BYP/WESLEYAN BLVD N @ US-64
 I-40 W @ NC-42/EXIT 312
 I-95 S @ PITTMAN RD/EXIT 101
 US-264-ALT E @ US-301/NC-58/WARD BLVD/NASH ST E
 NC-42 E @ BUFFALO RD
 I-40 W @ NC-210/EXIT 319
 I-40 W @ JOHNSTON/WAKE COUNTY LINE
 US-301 S @ US-264-ALT/WARD BLVD/PURINA CIR S
 US-301-BYP/WESLEYAN BLVD S @ US-64



Road	#
I-40	5
US-301	5
NC-42	3
I-95	2
NC-58	2
NC-97	1
US-70	1
US-264A	1

Recommendations

Cost of Congestion: Upper Coastal Plain RPO Region

	<u>2017</u>	<u>2018</u>	<u>2019</u>	<u>Average</u>	<u>Total</u>
Vehicle Hours	371,766	423,904	474,464	423,378	1,270,134
Total Cost of Congestion to Commercial Enterprise	\$ 37,358,793	\$ 42,598,118	\$ 47,678,839	\$ 42,545,250	\$ 127,635,751

- Cost of congestion + delay to commercial enterprise increasing
- Freight fluidity is a competitive advantage

RESOURCES



Office of Logistics + Freight Resources

- Project specific analysis and support from planning through construction
- On-demand subject matter expertise, data + analytical support/guidance
- Maps, freight-relevant GIS resources developed + maintained
- Economic/industry research + information for planning
- Industry engagement through Regional Freight Councils
- Partners in collaboration; pilot programs or initiatives
- Guidance to better consider freight into their CTP/MTP/long-range planning



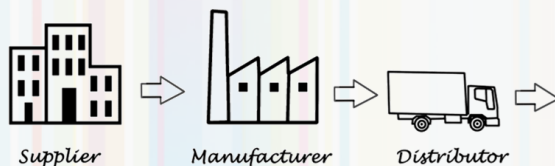
BUT WAIT THERE'S MORE

Deep Dives: Know Your Project Area

- Can you name the top 5 industrial sectors in your project area by GDP contribution?
- What are the top 5 most active manufacturing sectors near the project area?
- Are there important industrial sector concentrations or corridors to consider?
- What is the total square footage of warehouse space in your area?
- Are there major freight handling assets or facilities in your area?

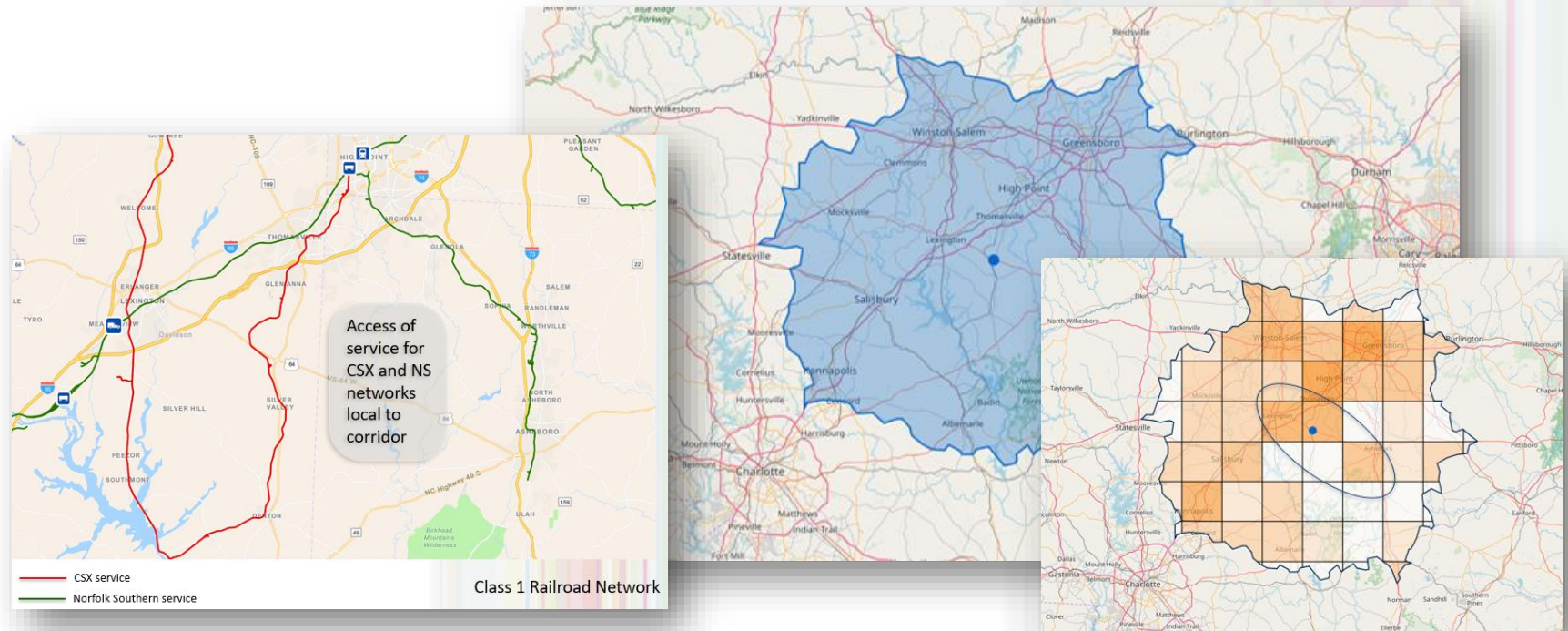


There are many resources to better understand the economic environment in your planning area

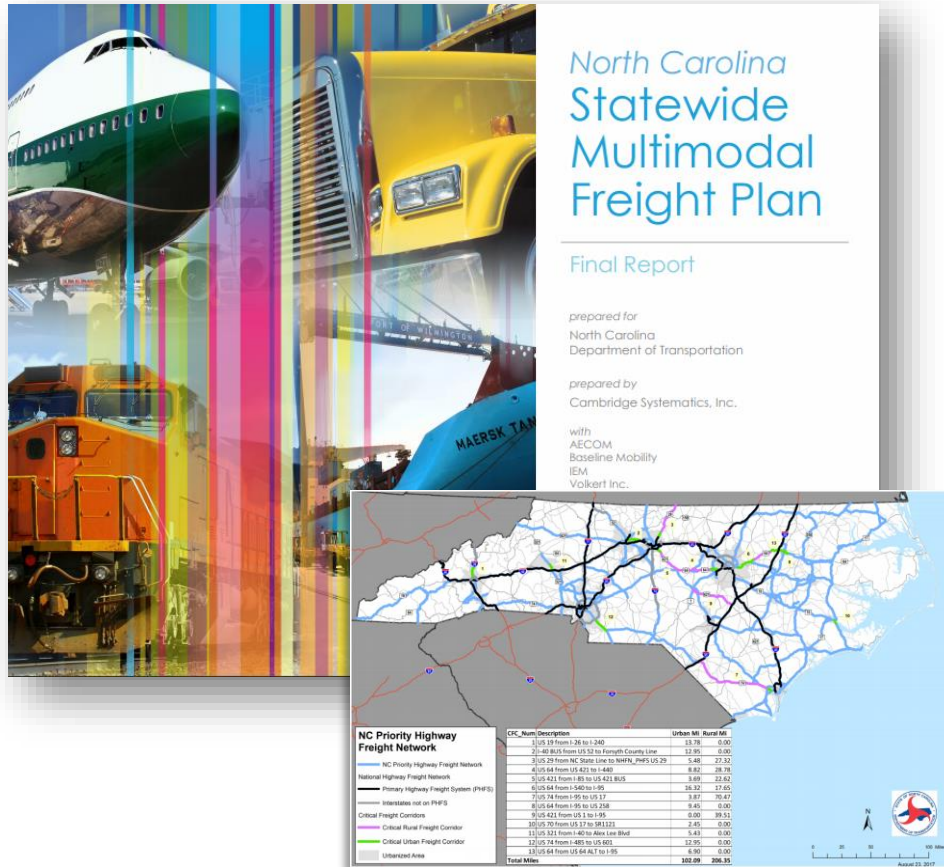


Does Project Design Satisfy The Demands of Industry?

- Industrial + Commercial context for your CTP or MTP
- Understand freight transportation density
- Recognize key connections to freight pathways
- Identify industry relevant to your CTP or MTP



North Carolina Statewide Multimodal Freight Plan



- Common freight and logistics planning-related acronyms (NCSWMMFP)
- Data sources which may be of interest
- Freight transportation assets, operational stats, commodities and trade information
- Freight and supply chain sector data
- Performance, key metrics, safety information, trends and issues, asset management, and more...

→ bit.ly/NCDOTfreightplan

Supply Chain + Logistics Profiles

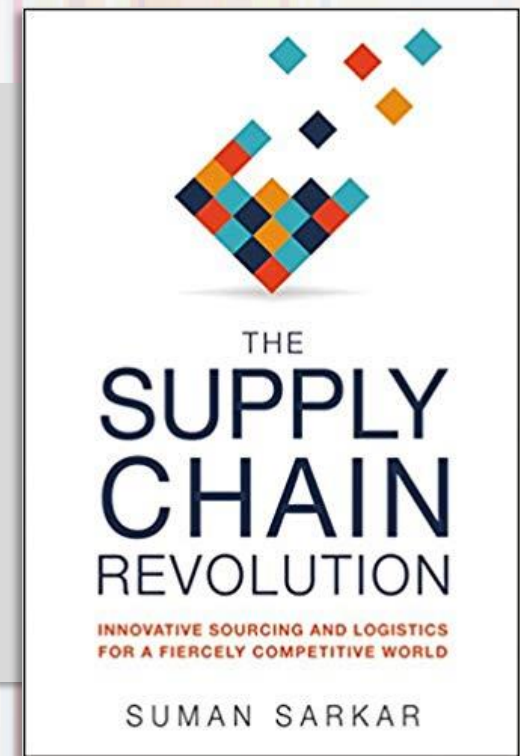
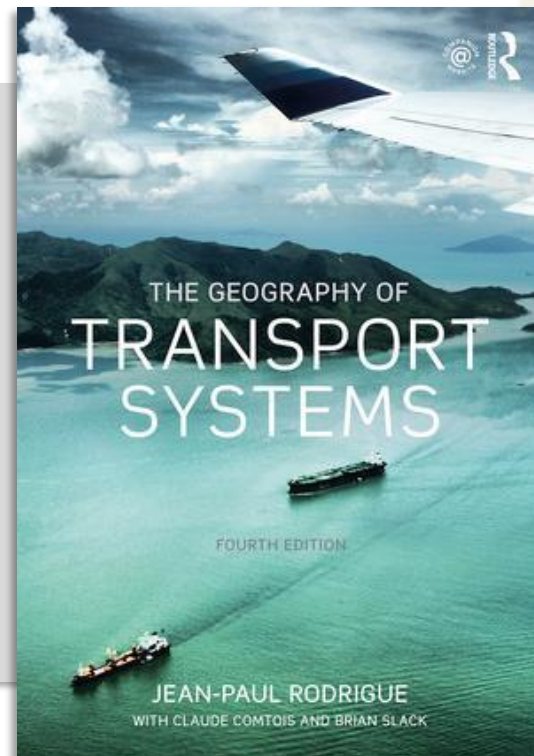
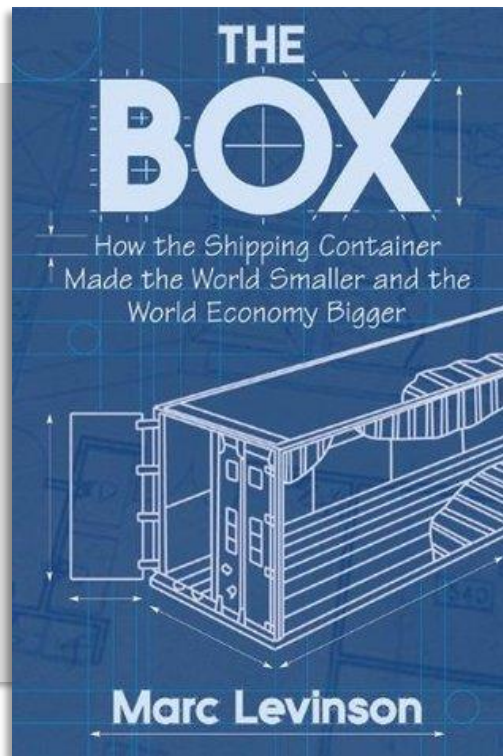
Gotta catch 'em all!™



- Commodity Flow
 - Air Cargo
 - Military Cargo
 - Rail
 - Maritime
- Pipeline/Hazardous



Recommended Reading



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