



Piedmont Transportation Professionals
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Disruptive Forces in Transportation 2016

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2016 International Troubles

Brexit

- EU trade agreements in limbo
- Uncertainty a drag on foreign currencies



India

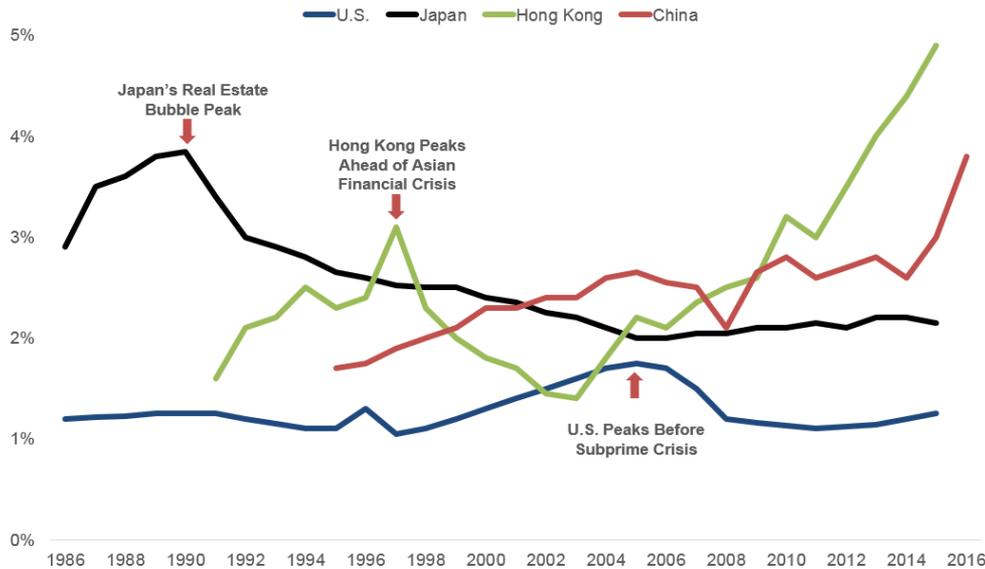
- Demonetization of 500 and 1000 rupee (\$7.50 and \$15 US)
- Cut GDP forecast from 7% to 3.5%



China

The Biggest Real Estate Bubble Ever?

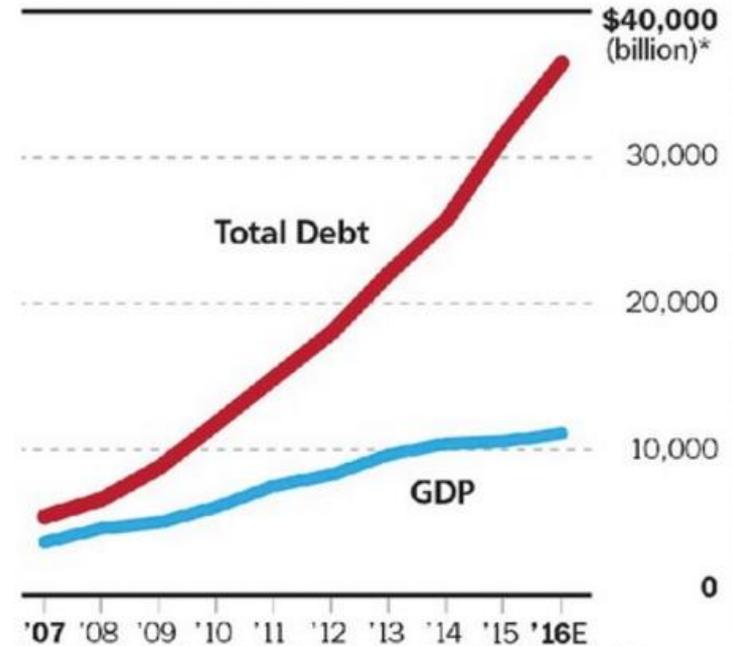
Housing Value as a percent of GDP



Source: "Chinese property bubble bigger than sub-prime: HSBC," Valuelwalk.com

www.dentresearch.com

GDP vs. Total Debt



E=Estimate. *Includes household, corporate and government debt. All figures based on year-end or Sept. 2016 RMB/USD exchange rate.

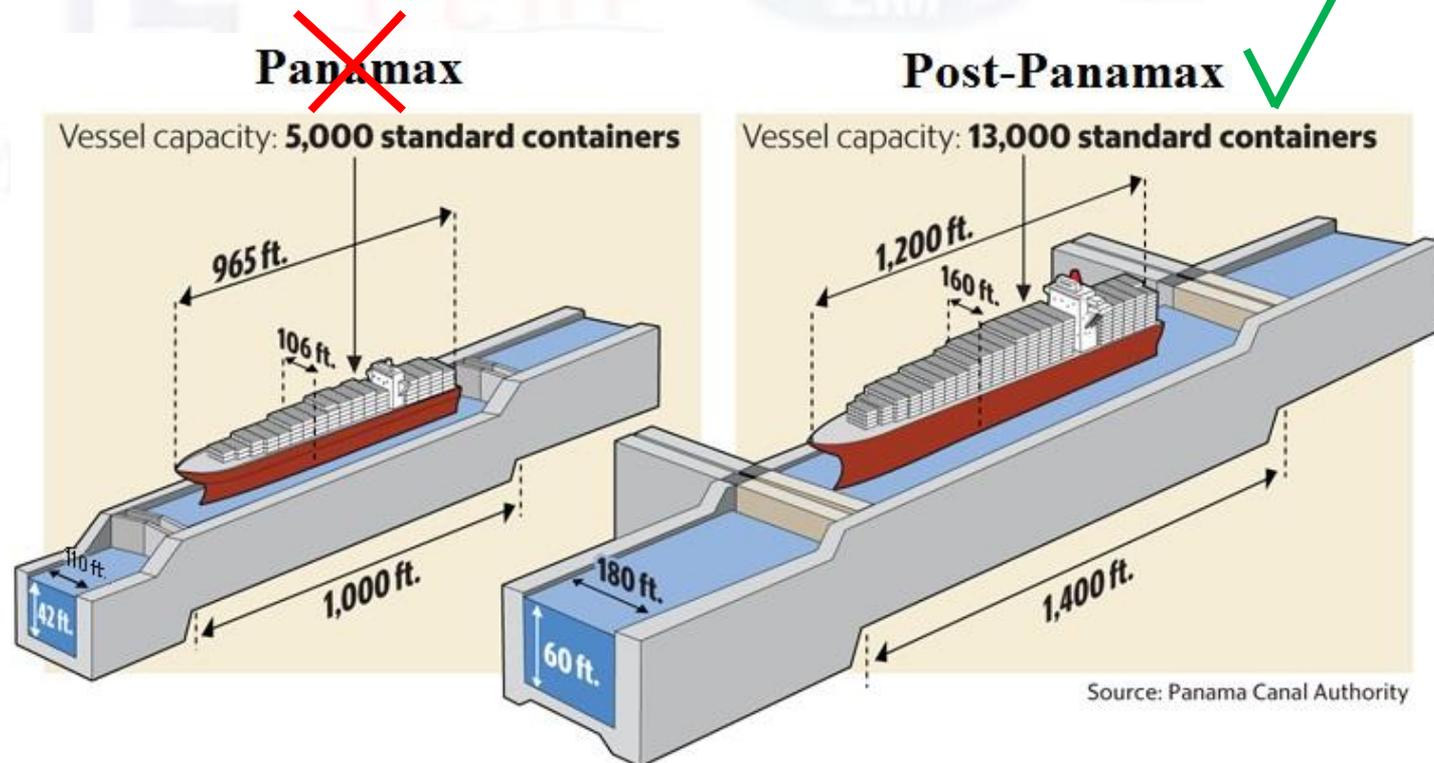
Source: China Query



Rough Seas and Headwinds in Shipping

- Shipping rates < Operating costs
- Over 100 sold for scrap in 2016, 200 more “in waiting”
- Many are only 10-15 yrs old!

- Economies of Scale = Bigger ships
- Hanjin bankruptcy stranded \$14B US bound holiday merchandise
- More mergers/consolidation likely



International Banks Jump Ship

- Global shipping debt is \$400 billion
- German banks have \$100B exposure.
- Banks from Europe to Asia are pulling out of, or significantly reducing shipping loan business, including:

Deutsche Bank



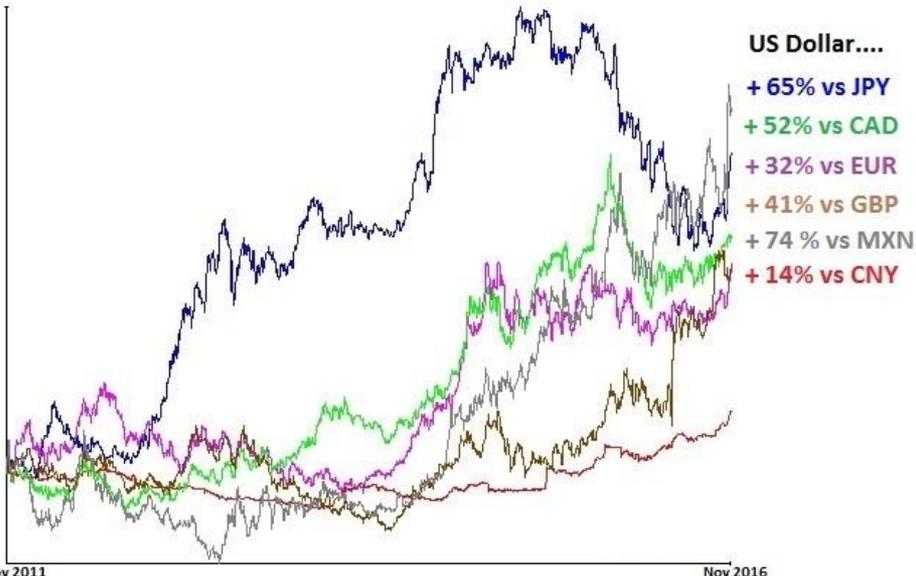
LLOYDS BANK



Nationally



- Protectionism or free/global trade?
- Reshoring of jobs – esp. automobile and heavy manufacturing
- Repatriation of \$2.5 - \$3 trillion US corporate wealth
- Major infrastructure bill?
- Drill baby drill – New life for Keystone & Dakota Access pipelines?



- Strengthening US dollar:
- Helps U.S. consumers - makes foreign imports (CCFC) cheaper.
- Hurts U.S. exports, production and employment.



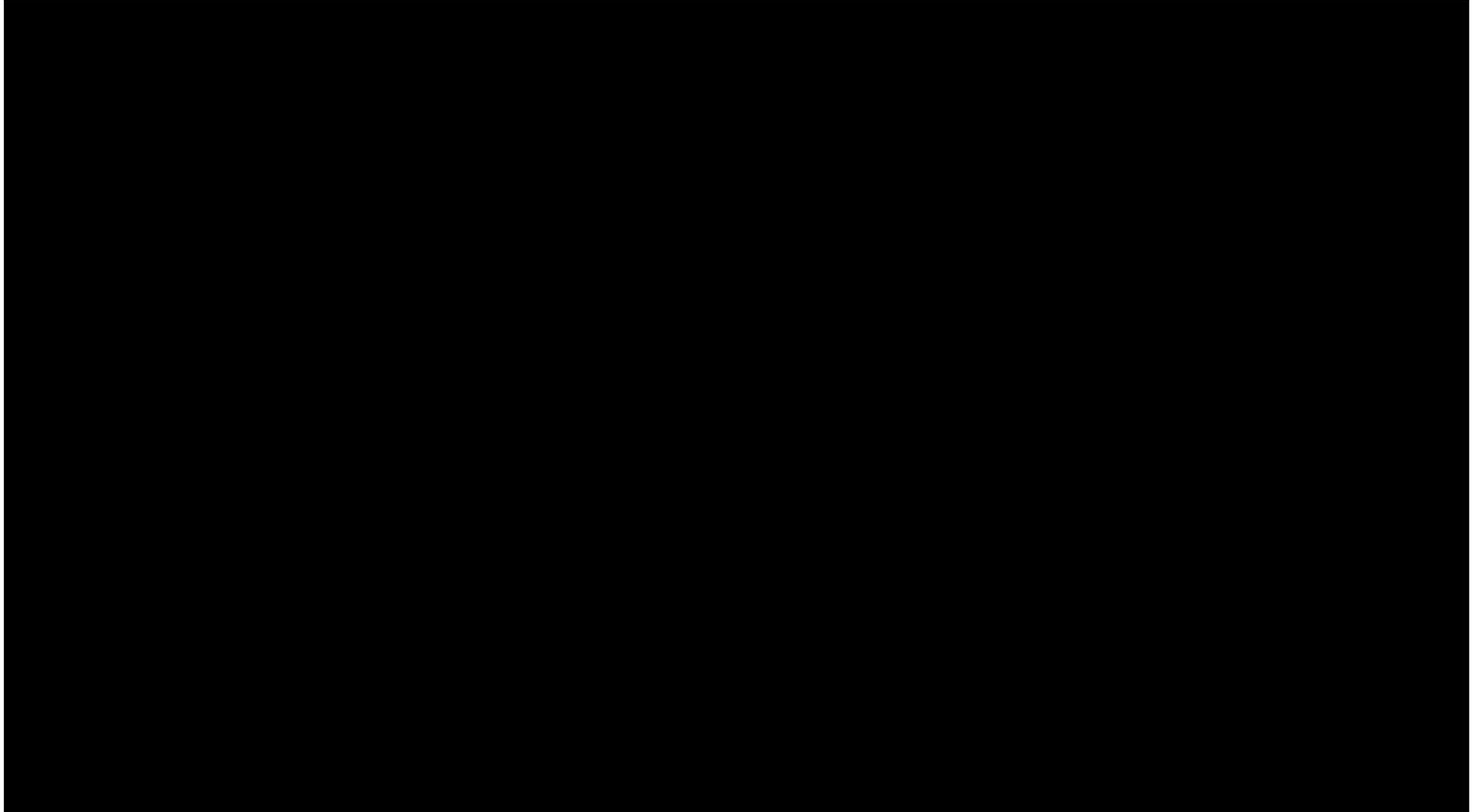
Renaissance in Trucking Technology

2013



Autonomous Trucks

2016



Autonomous Cars, Taxies, and Buses



World's First

Federal Automated Vehicles Policy

*Accelerating the Next Revolution
In Roadway Safety*



September 2016

- “For Safe Testing and Deployment of Automated Vehicles”
- Includes Model State Policy – Federal vs State regulatory responsibilities
- Level 5 “fully autonomous” vehicle: USDOT will not require drivers license or steering wheel
- New era in mobility for elderly, blind, disabled, and impaired drivers



Accident Statistics

32,000+ deaths in 2015 traffic 7.2% increase from 2014

94% are caused by driver behavior and preventable

10,265 killed by drunk drivers

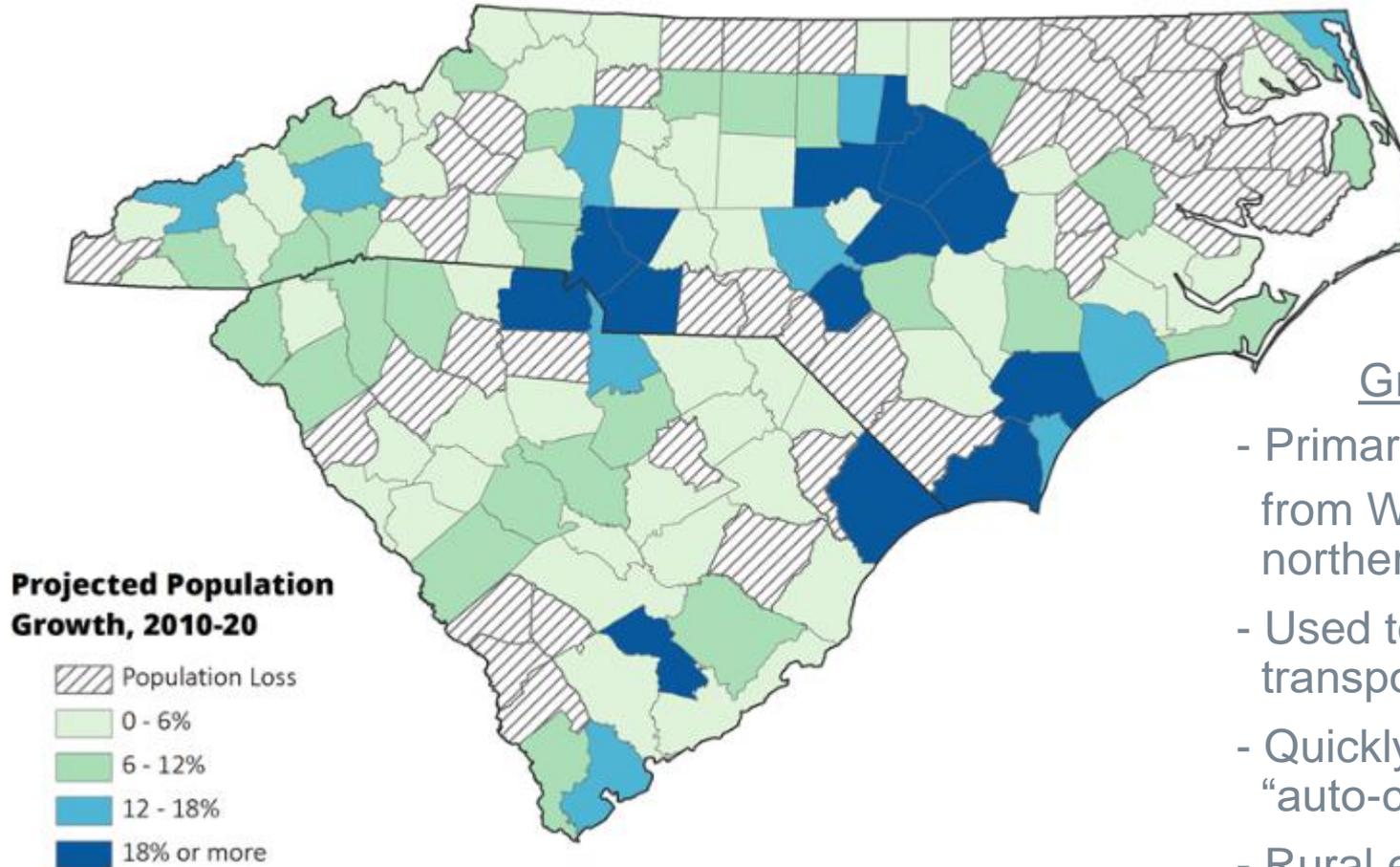
Estimate: Fully autonomous vehicles could prevent >90% of traffic deaths

Annual costs of accidents, US \$300B, NC \$1.71B



What's Going On In NC?

Projected population growth, 2010-2020



Growth:

- Primarily transplants from West Coast and northern states
- Used to public transportation but...
- Quickly adopt an "auto-centric" lifestyle
- Rural exodus continues

Sources: NC OSBM, SC Revenue & Fiscal Affairs Office



Carolina Connector Intermodal Terminal (CCX)

Game-changing project:

- Multi-modal - linking rail, trucking, ports
- Removes millions of truck-miles annually.
- Access across CSX network, including Port of Wilmington.
- Enhances entire eastern US intermodal network.
- Rail access to underserved areas of NC.
- Container shipping an option for Ag products



Carolina Connector Intermodal Terminal (CCX)

- Team effort



- **\$270M** state-of-art terminal and freight rail infrastructure:
 - Improved access to domestic and international markets
- **\$310M** in transportation benefits to North Carolina:
 - Logistics, environmental, road maintenance and safety benefits
 - Cost savings for businesses and the State of North Carolina
- Creates jobs

149

Terminal Jobs

8,000 to 20,000

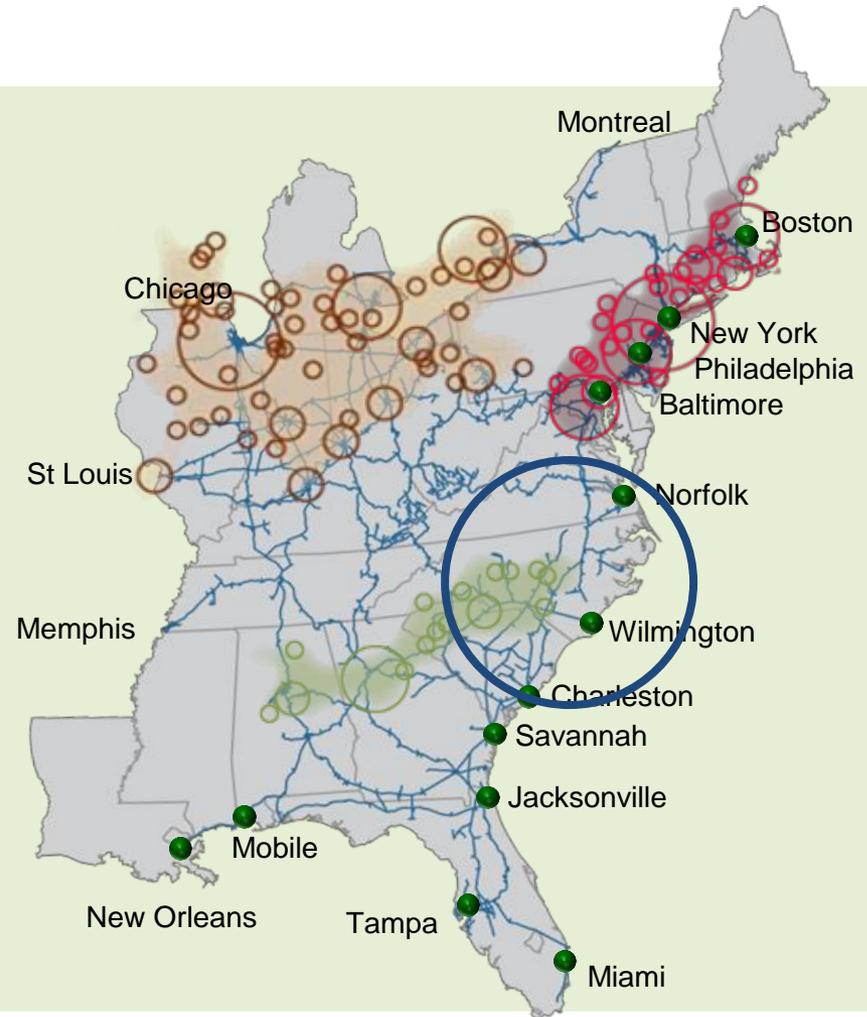
Induced Jobs in Region

Up to **1,500** Jobs

Directly Related to Terminal

North Carolina Well-Positioned for Eastern Hub

- Connects all 5 eastern U.S. population centers
- Serves two-thirds of the nation's population
- Ports connect U.S. resources and global manufacturing
- I-95 connection midpoint between Florida and New York



CCX Links Freight Nodes



Class I Railroads

- 7 Class 1 Railroads operate in 44 states
- Annual revenues > \$450M annually
- Coal volumes down 28% - 40%
- Revenues down due to coal, but somewhat mitigated due to increases in intermodal.
- Trying to grow intermodal business.
- Successfully capturing some business from trucking.
- Autonomous trucks pose a significant threat to Class 1 railroads.

NORFOLK SOUTHERN

BNSF

[CSX]

CN

NC

Autonomous Trains

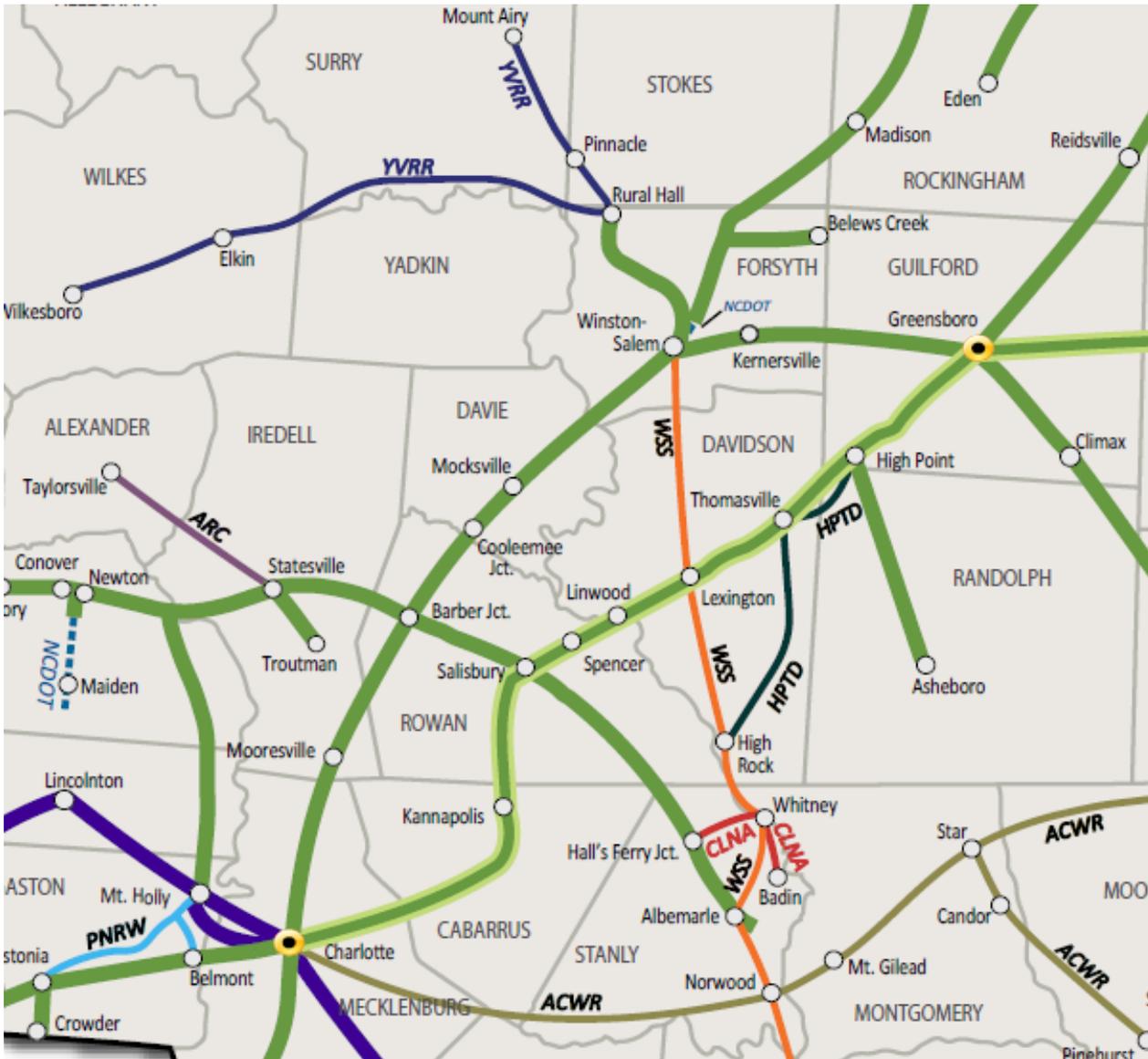


<https://www.youtube.com/watch?v=51Iz6xuybDM>



Short line Railroads

- 1980 Staggers Rail Act allows railroads to unload unprofitable lines.
- Operating revenues < \$28 million/yr
- 550 short lines operate 50,000 mi or 30% of total railroad mileage.
- Employ 20,000 people, move 14 million carloads / yr
- 1 in 4 carloads is touched by a short line.
- 20 in NC
- Can provide substantial cost savings for some industries



Questions

