SRF 2016
Southeast Rail Forum
District of Columbia • Virginia • North Carolina • South Carolina • Georgia • Florida

Preparing for Change...Planning for Success

Rail Benefits, Impacts and Needs at the Local Level

Toni Horst
AECOM

NCDOT RAIL DIVISION

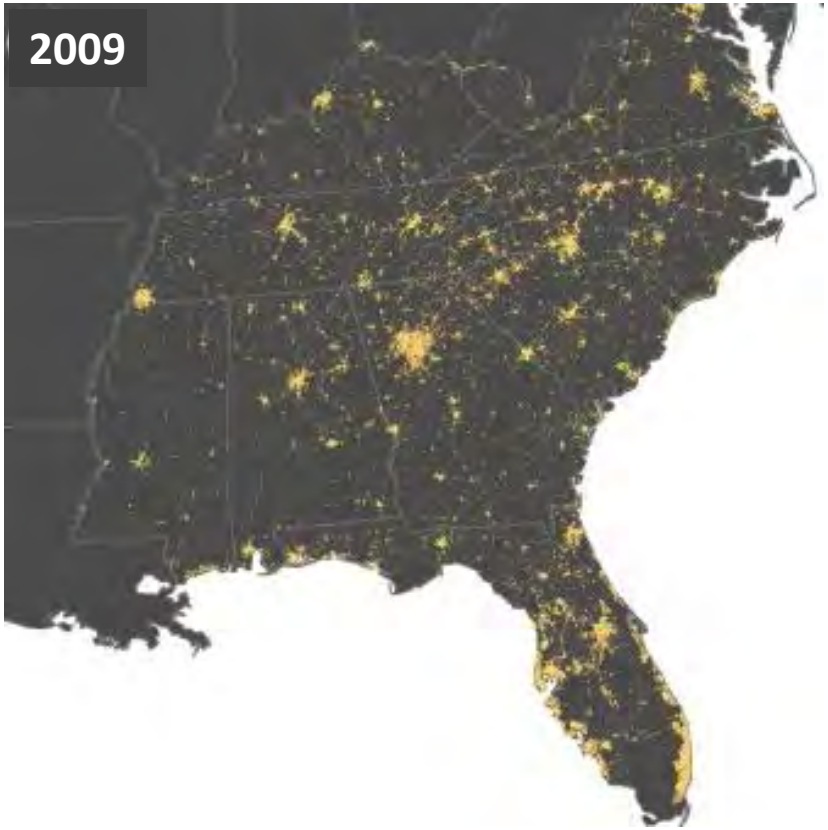
WTS
Advancing Women in Transportation
NC Triangle Chapter

Organization of the Presentation

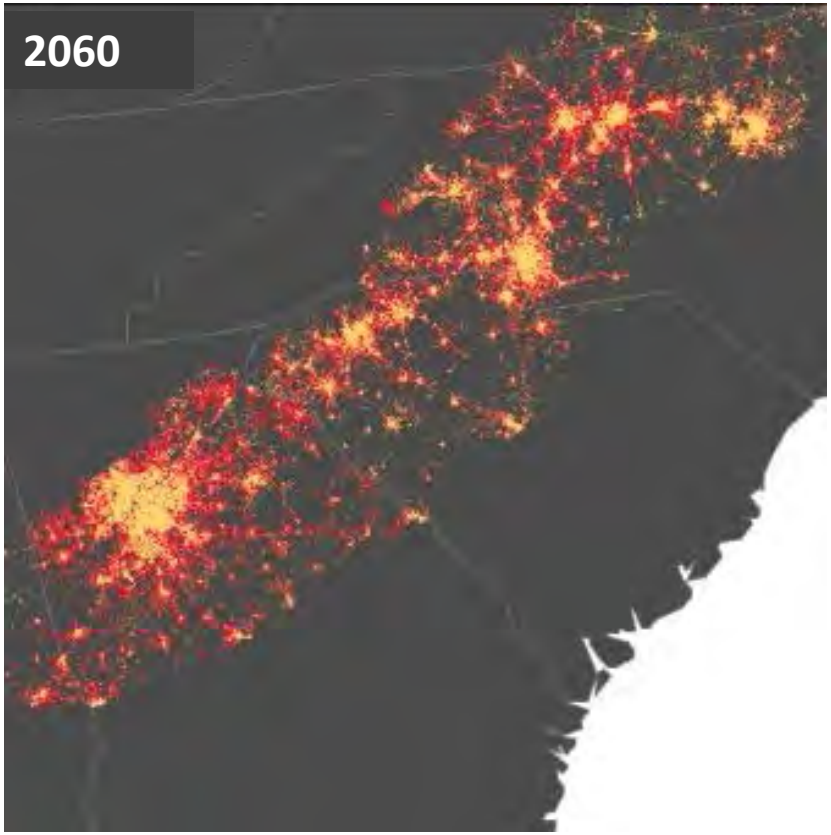
- Regional Context for Local Impacts and Needs
- Challenges and Economic Benefits Within the Megaregion
- Types of Economic Outcomes from Successful Rail Investment
- Local Benefits
  - Choice and cost savings
  - Focused development around stations
  - Economic competitiveness

Projecting Our Current Pattern of Growth Into the Future—Business as Usual

Southeast Region



Piedmont Megaregion in the Southeast



Source: The Southern Megalopolis: Using the Past to Predict the Future of Urban Sprawl in the Southeast U.S., 2014

Economic Benefits Generated Through the Solution of a Transportation Problem

Role for Freight Rail

- Need to efficiently serve a large densely-urban consumer base
- Need to move freight through and within the region for production

Role for Passenger Rail

- Overcoming congestion
- Improving reliability
- Connecting multiple urban centers and labor markets
- Ability to focus urban growth

An opportunity to shape the “business as usual” development outcome

Economic Benefits of Investments in Rail

<u>Direct Benefits</u>

- Mobility improvements
- Travel time savings
- Cost savings
- Transportation system efficiency
- Accident reduction
- Energy savings
- Environmental quality improves

<u>Market Response</u>

- Increased competitiveness
- Productivity improves
- Land-use patterns change
- Property values increase
- Community amenity
- Land preserved for other purposes
- Value of greater range of options

The Value of Travelers Making Different Choices—Trading off Time and Cost

Net Change in Value of Travel Time and Travel Cost Savings by Mode for Diverted Users

		In millions of $2014		
		Alternative 1	Alternative 2	Alternative 3*
Travelers Shifting from Air to Rail	Change in value of travel time	-$77	-$95	-$105
	Change in travel cost	$152	$187	$209
	Net change	**$75**	**$92**	**$104**
Travelers Shifting from Auto to Rail	Change in value of travel time	$354	$437	$560
	Change in travel cost	$592	$668	$705
	Net change	**$946**	**$1,105**	**$1,265**
Travelers Shifting from Bus to Rail	Change in value of travel time	$100	$127	$152
	Change in travel cost	-$48	-$72	-$90
	Net change	**$52**	**$55**	**$62**
Travelers Shifting from Rail to Rail**	Change in value of travel time	-$3	-$72	-$37
	Change in travel cost	$470	$407	$367
	Net change	**$467**	**$335**	**$330**

Source: NEC Future DEIS

Station-Area Development

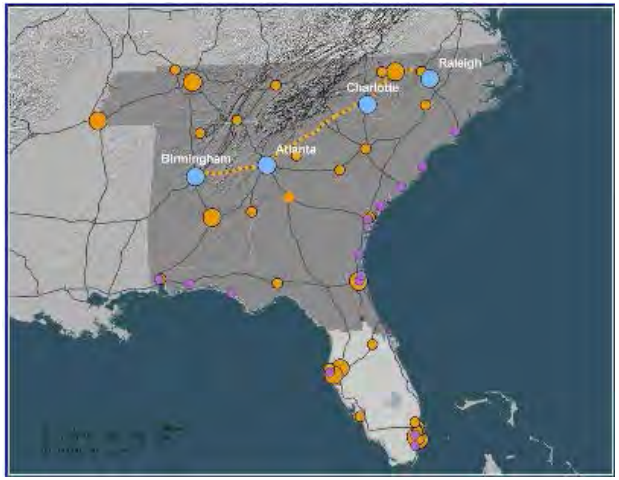
- Rail service can accelerate and shape development but other factors need to be in place
- Additional factors needed for development
  - Good schools, low crime rates, availability of land, ability to assemble parcels, willing local government partners, appropriate zoning and density, utilities, and supportive infrastructure
- Rail service pricing influences the type of development constructed near stations
  - Higher cost rail service → business travel market and greater potential for office, hotel, and higher end residential
  - Mid/Lower-cost rail service → broader travel market and more frequent use, greater mix of retail and mid-level residential anticipated
  - Locations with direction connections are the most preferred

Source: NEC Future Economic Development Workshops

Rail can move the metro economy

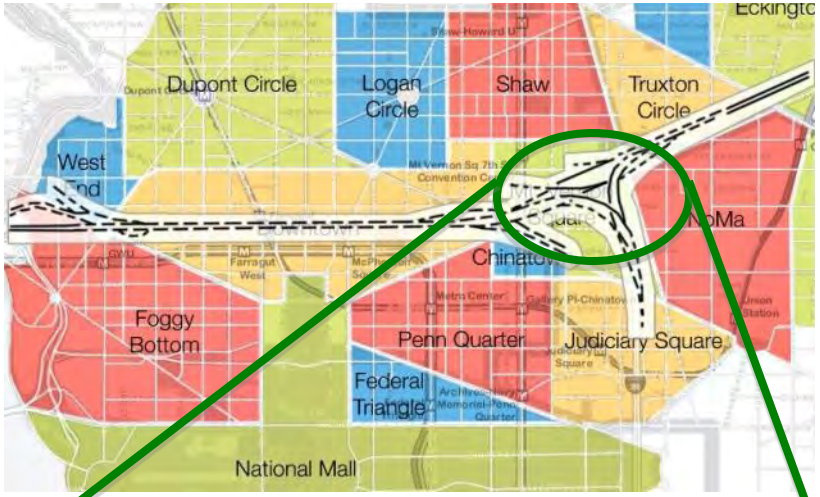
Without reliable travel:

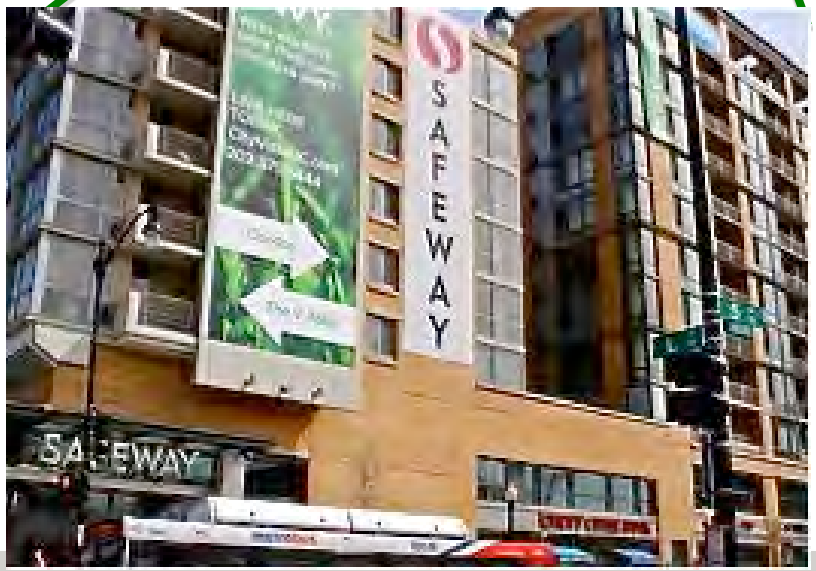
- Congestion fractures the regional economy
  - Employers lose access to workers
  - We lose competitiveness of single economy



Map Source: Georgia Tech Center for Quality Growth and Regional Development

Smaller Urban Footprint Preserves Valuable Land For Other Uses





Without rail, more highways and roads are needed

With rail, we can avoid some of this construction

- Preserving land for other uses
- Supporting the tax base
- Creating a more livable community

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Rail Benefits, Impacts, and Needs at the Local Level

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Benefits and Impacts

- Multimodal Travel Options
- Economic Development
  - NCRR/NS Mainlines
  - Intermodal Yard
  - Future Mega-Site
- Enhanced Tourism

The 76th National FOLK FESTIVAL
greensboro, north carolina
SEPTEMBER 9-11, 2016

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Issues and Needs

- Rail Safety
  - Trespassers
  - Distractions
- Aesthetics and Noise
- Community Outreach and Education
  - COG Initiatives and Resources
  - <u>Target</u>: Youth, Downtown, and Neighborhoods

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Rail Benefits, Impacts, and Needs

Ned Curran, Chairman,
North Carolina Board of Transportation

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Comprehensive State Rail Plan

- Emphasis on desired outcomes & program effects of NC's vision for rail and transportation
- Integrates Governor McCrory's 25-Year Vision
- Near term projects set in part by Strategic Transportation Investments P3.0; Statewide Rail Plan can be used as guide to develop partnerships and projects for next round of STI P4.0

Comprehensive State Rail Plan

Integrating the Governor's 25-Year Vision Rail Related Goals:

GOV. McCRORY'S 25 year
Vision for North Carolina
MAPPING OUR FUTURE

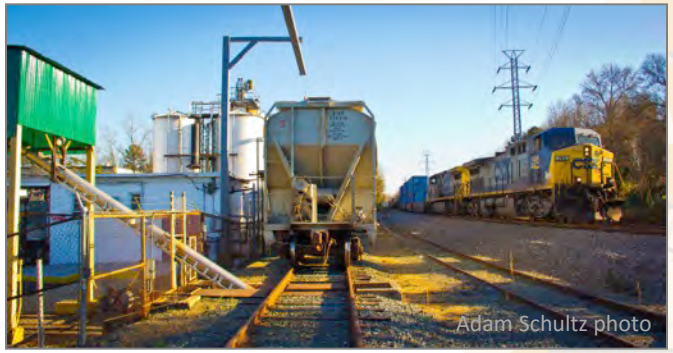
- Improve rail connections between military bases and ports
- Provide and improve intermodal facilities to support freight shipping
- Pursue regular intermodal service to the Port of Wilmington
- Improve rail access to GTP and Port of Morehead City
- Provide economically competitive rail service to inland ports
- Improve rail and seaport connections to I-95 to serve the Eastern US
- Support connections to privately-developed mega-sites
- Expand mass transit options, including rail
- Expand passenger rail options in all regions of the state

Economic Impact of Rail in North Carolina

Railroad Direct Economic Impacts for Freight and Passenger Rail in North Carolina

	Freight (2014 Dollars)	**Passenger** (2014 Dollars)
User Cost Savings (Shipper)	$1,496M	
Amtrak Wages and Purchases		$89M
Tourist Spending		*$2M
GSMR Direct Wages and Purchases		$6M
GSMR Tourist Direct Spending		$16M
Pavement Savings	$96M	$4M
Congestion Savings	$162M	$4M
Total	**$1,754M**	**$121M**

**Tourist spending, pavement savings, congestion savings, auto emissions, and safety for passenger rail are based on trips to NC that would not have been made without rail.*



Freight Program – STI P3.0

Class I Projects and Needs – in 2016-2025 STIP (STI P3.0)	0-5 Years	BCA Ratio for Near Term Projects (Discounted at 3%)
New Norfolk Southern TBT (Bulk Terminal) Facility in Charlotte	$976,000	1.97
Container parking/storage adjacent to Norfolk Southern's Greensboro Intermodal Facility (converts former Roundhouse property)	$1,695,000	13.11
CSXT – 10,000 foot siding extension at Stouts in Union County. Creates passing siding on segment of single track that benefits general freight and intermodal traffic	$10,600,000	14.77
Upgrade NS rail line paralleling US 52 in Albemarle (Stanly County) to allow for freight	$2,126,000	1.39
Subtotal	$15,397,000	
Funded by State	$8,548,000	
Funded by CSXT	$5,300,000	
Funded by NS	$1,549,000	
Additional Near, Mid, and Long-term Class I freight rail projects: (2015-2040)*	$1.1B	

*Includes projects such as track improvements/new access, intermodal and rail yard improvements, crossing safety and grade separations, corridor preservation and energy development support.

Plan Draft Recommendations – Passenger

Southeast Corridor

- Implement 4th and 5th *Piedmont* frequencies
- Add stops, and improve travel times
- Construct multimodal stations – Charlotte & Raleigh
- Secure S-Line corridor and complete service planning

New Markets

- Utilize Thruway bus services to grow markets/ridership
- Incrementally develop WNC and SENC service
- Conduct studies for future market connections

Good Stations + Right Location Impact Ridership

Building the Bookends of NC By Train Service

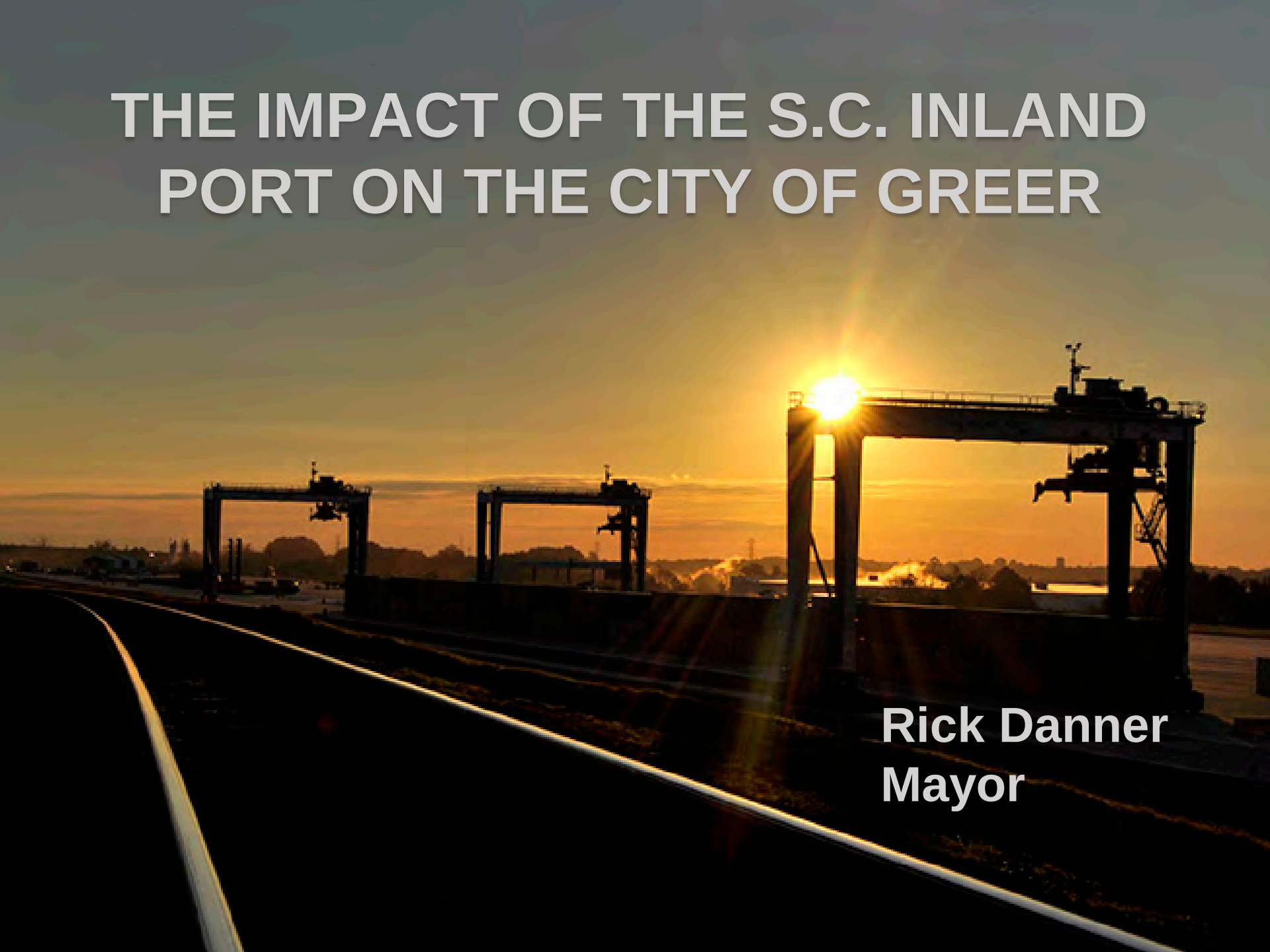
- Construction underway on Raleigh Union Station (RUS) – a new train station in a renovated downtown warehouse – set to open late 2017

RUS Visualization

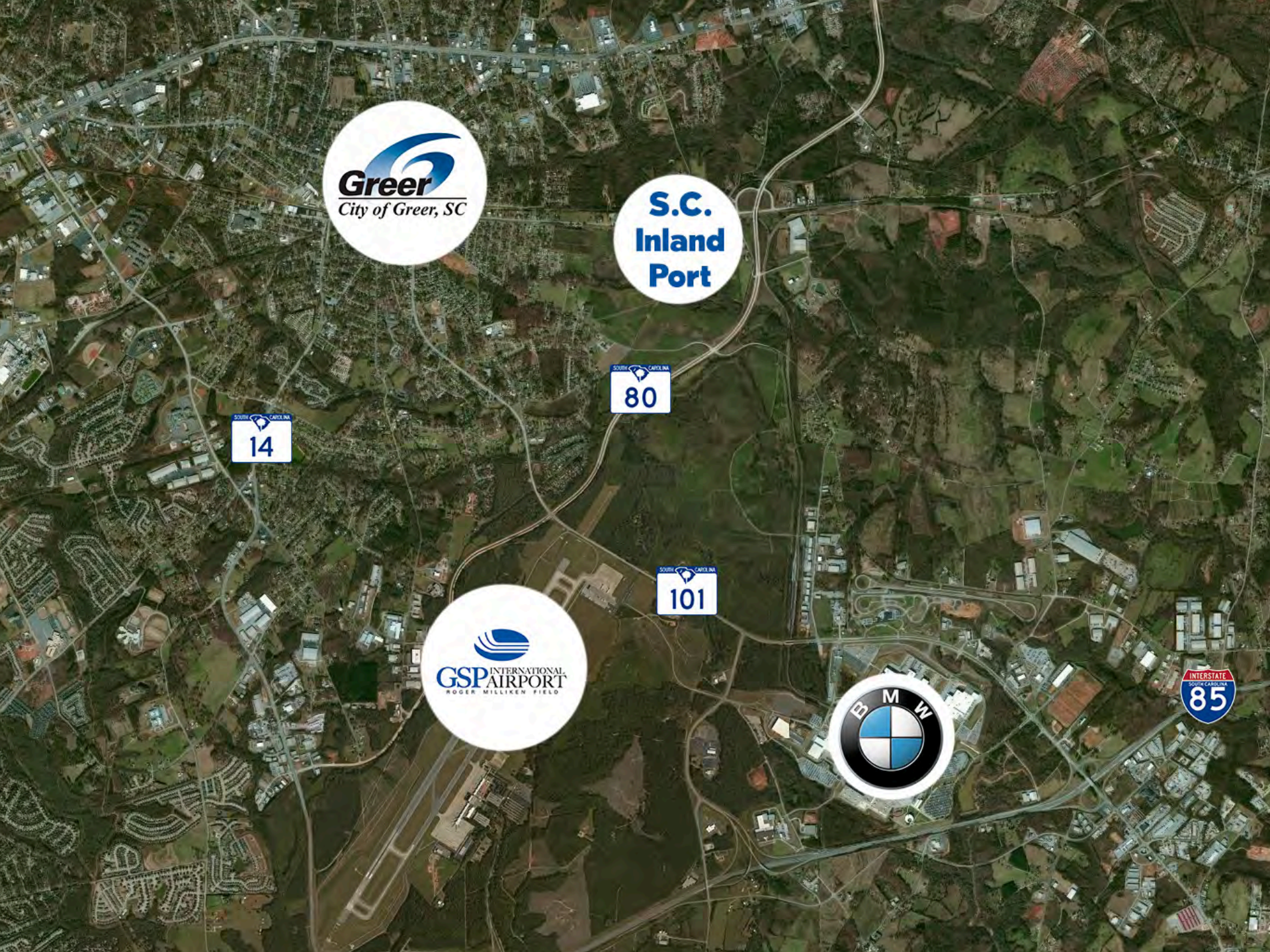
Work has started on RUS

- Planning and design is underway for a multi-modal transportation center in downtown Charlotte – Charlotte Gateway Station – which will consolidate a variety of transportation options in a central facility
- Projects funded through Federal/State/Local partnerships

THE IMPACT OF THE S.C. INLAND PORT ON THE CITY OF GREER



Rick Danner
Mayor


Greer
City of Greer, SC
S.C. Inland Port
SOUTH CAROLINA 80
SOUTH CAROLINA 14
SOUTH CAROLINA 101
GSP INTERNATIONAL AIRPORT
ROGER MILLIKEN FIELD
BMW
INTERSTATE SOUTH CAROLINA 85

South Carolina Inland Port
15
South Carolina Inland Port
17

GREER
CSX
CSX
CSX
NS
NORFOLK SOUTHERN
South Carolina Inland Port
BMW Manufacturing Corp.
West Wade Hampton Boulevard
East Wade Hampton
North Main Street
South Main Street
Arlington Road
South Buncombe Road
South Suber Road
East Suber Road
Brushy Creek Road
Hammett Bridge Road
Poplar Drive
Poplar Drive Extension
New Woodruff Road
J Verne Smith Parkway
Brockman McCinnon Road
Highway 101 South
Old Spartanburg Road
SC 101
SC 290
SC 14
SC 80
US 29

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GREER CITY HALL
STOP

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Columbus To Atlanta High Speed Rail Feasibility Study

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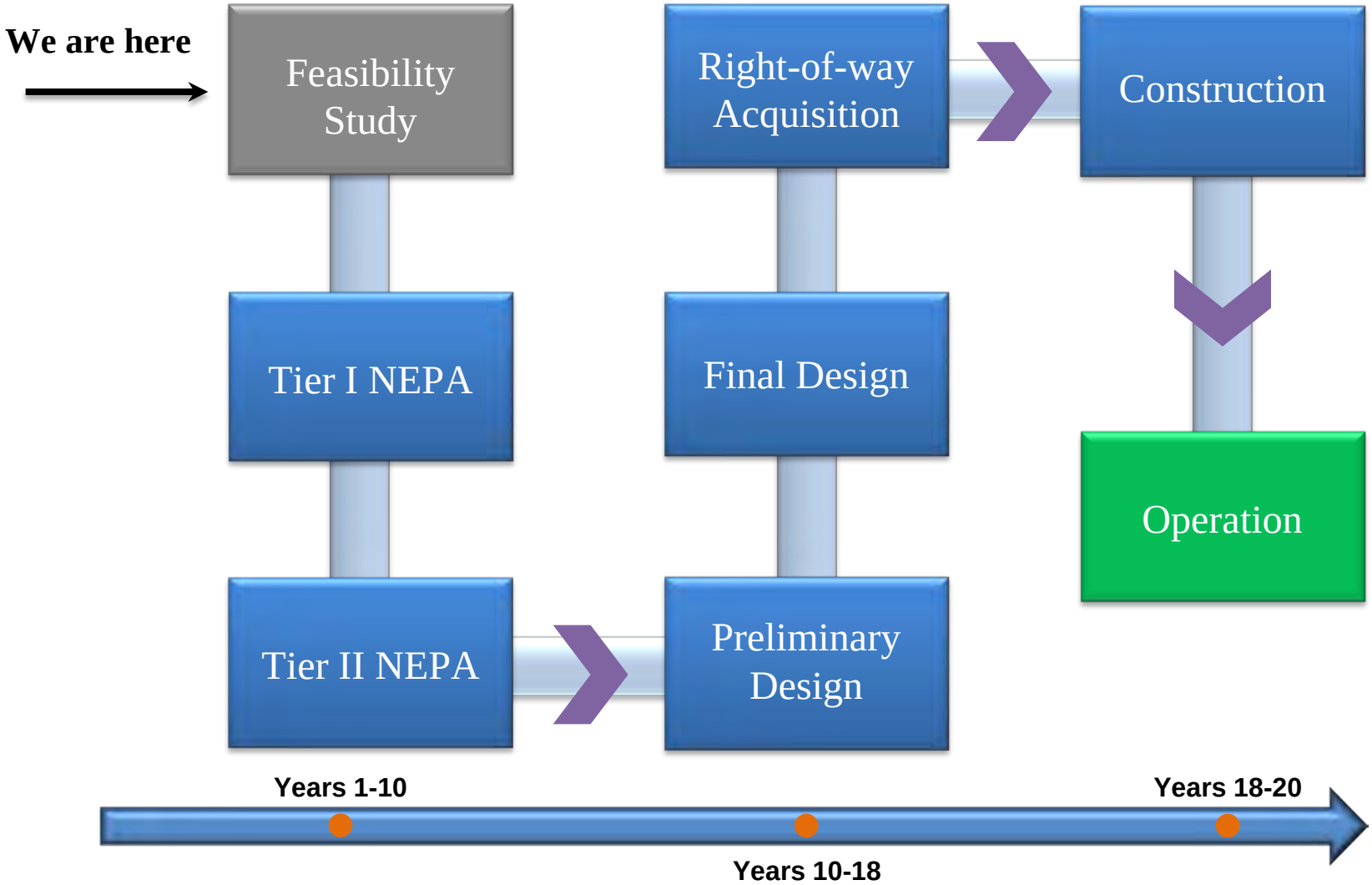
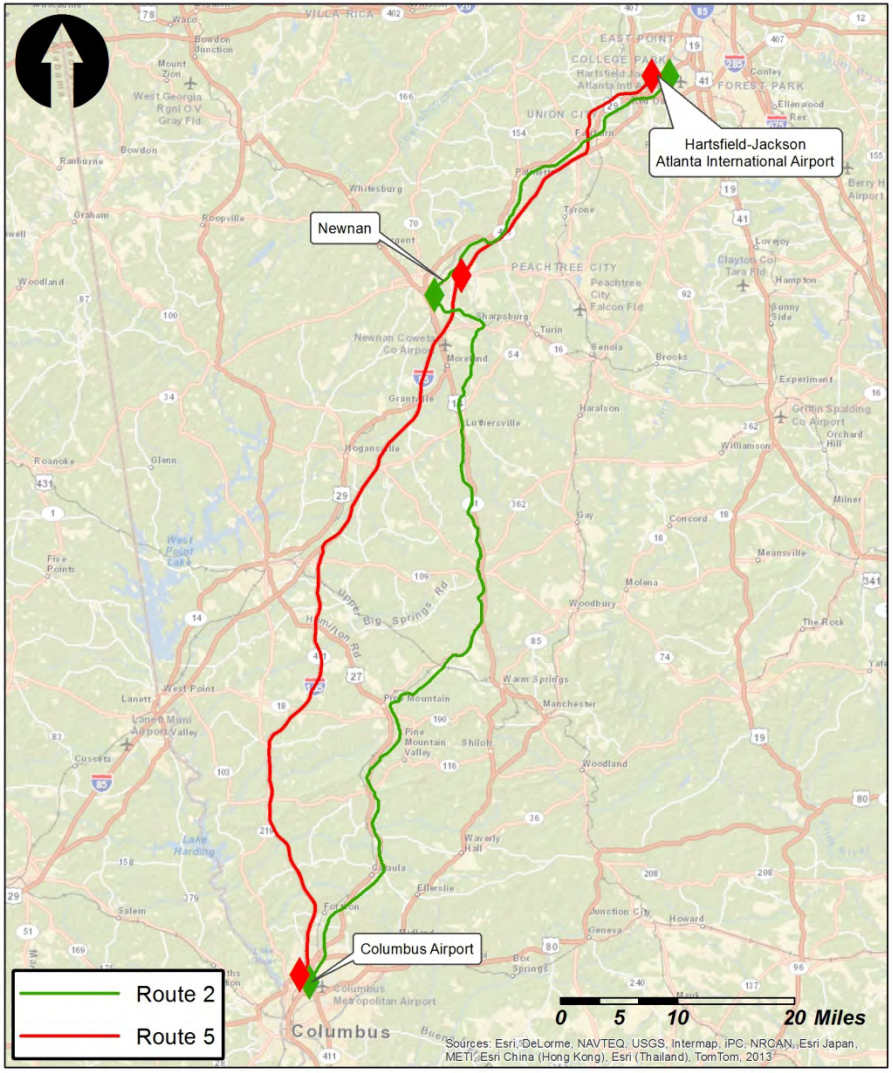
Federal Implementation Process



Developing Alternatives

Scenario Development

- Evaluate the universe of route alternatives based on connectivity between Columbus and Atlanta
- Screen representative alternatives
- Refine and evaluate for feasibility



Columbus to Atlanta High-Speed Rail
Refined Route Alternatives

Estimated Capital Costs

Methodologies

- Follow FRA Standard Costing Categories:

FRA Standard Costing Categories	
10	Track Structures & Track
20	Stations, Terminals, Intermodal
30	Support Facilities
40	Sitework, Right-of-Way
50	Signals & Communication
60	Electric Traction
70	Equipment
80	Professional Services

Notes:

- *All costs include 30% contingency, unit costs based on Atlanta to Charlotte PRCIP*
- *All infrastructure improvements for shared-use corridors can be done inside the existing freight right-of-way of 100-fProposed right-of-way for dedicated-use corridors is can be done inside the existing interstate right-of-way*

Results

- Costs estimated for Emerging, Regional, Express alternatives

Columbus Airport – H-JAIA		
	Total Cost	**Cost per Mile**
Emerging	$1.3 Billion	$13.0 Million
Regional	$2.0 Billion	$22.2 Million
Express	$3.9 Billion	$42.5 Million

Notes:

- *Emerging utilizes abandoned rail corridors for much of the route, reducing grading costs.*
- *Emerging includes minimal right-of-way acquisition, dependent on ownership of abandoned section*
- *Express includes full electrification, accounting for total difference ($1.9B) between Regional and Express*
- *Cost per mile is an average for the entire route, cost per mile fluctuates depending on location of route*
- *Regional can be an phasing opportunity for Express*

Capital Costs Comparison

Cost per Mile		
Mode	**Cost**	**Source**
Interstate 185	~$7.8M	Federal Highway Administration (FHWA)[1]
Intercity Passenger Rail	$10.7-$42.5M	Columbus-Atlanta HSR Feasibility Study[2]
Street Car	$25.6M	MARTA – Atlanta Streetcar[3]
Light Rail	$132M	MARTA – Clifton Corridor[4]
Interstate (new 4-lane)	$6.4-$12.4M	GDOT[5]
Interstate (widening)	$9.5-$17.6M	GDOT[5]

Notes:
[1] http://www.fhwa.dot.gov/highwayhistory/data/page03.cfm
[2] Based on conceptual engineering and unit costs from other regional studies
[3] http://streetcar.atlantaga.gov/how-is-the-project-funded/
[4] http://www.itsmarta.com/Clifton-Corr.aspx
[5] GDOT Office of Engineering, Cost Estimating System

Ridership and Revenue Summary

Methodologies

- Ridership based on:
  - Fare structure
  - Operating plan (Train Frequencies and Travel Times)
  - Existing/future auto and air travel

HSR Fares	Emerging	Regional	Express
Boarding Fee	$5.00	$5.00	$5.00
Fare per Mile	$0.28	$0.40	$0.40
Total One-Way Fare	**$33.50**	**$41.42**	**$41.42**

** Notes: Fare structure based on Atlanta to Charlotte PRCIP*

Results:

- Annual boardings are total boardings (one way, any origin-destination pair)
- Express illustrates highest ridership and revenue estimates

Year	Annual Boardings and Total Revenue (2013$)		
	Emerging	Regional	Express
2030	775,000 **$13.8 million**	968,000 **$20.5 million**	1.1 million **$23.6 million**
2040	945,000 **$15.1 million**	1.2 million **$22.3 million**	1.4 million **$25.8 million**
2050	1.2 million **$16.7 million**	1.4 million **$24.6 million**	1.7 million **$28.4 million**

** Notes: Revenues have been discounted to 2013$ and include on-board services*

Financial Results

Year	Annual Operating Ratio			
		2030	2040	2050
Emerging	Total Revenue	$13.8 million	$15.1 million	$16.7 million
	Total Cost	$16.6 million	$17.1 million	$17.5 million
	Operating Ratio	**0.83**	**0.88**	**0.95**
Regional	Total Revenue	$20.5 million	$22.3 million	$24.6 million
	Total Cost	$17.8 million	$18.1 million	$18.1 million
	Operating Ratio	**1.15**	**1.24**	**1.36**
Express	Total Revenue	$23.6 million	$25.8 million	$28.4 million
	Total Cost	$19.5 million	$19.3 million	$18.9 million
	Operating Ratio	**1.21**	**1.34**	**1.50**

** Notes: FRA seeks Operation Ratio > 1.0*
Revenue surplus can be used to help pay capital bonds

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