

NCDOT Rail Division

COMPREHENSIVE STATE RAIL PLAN



Executive Summary *Implementing the 25-Year Vision*

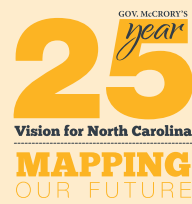


Photo: Matt Donnelly



Photo: Adam Schultz



Pat McCrory, Governor of North Carolina
Nick Tennyson, Secretary of Transportation
Keith Weatherly, Interim Deputy Secretary for Transit
Paul C. Worley, Rail Director

August 2015



Introduction

The North Carolina Department of Transportation (NCDOT) Rail Division developed this Comprehensive State Rail Plan (State Rail Plan) to help identify needs and guide investments in the state's freight and passenger rail network for the next 25 years.

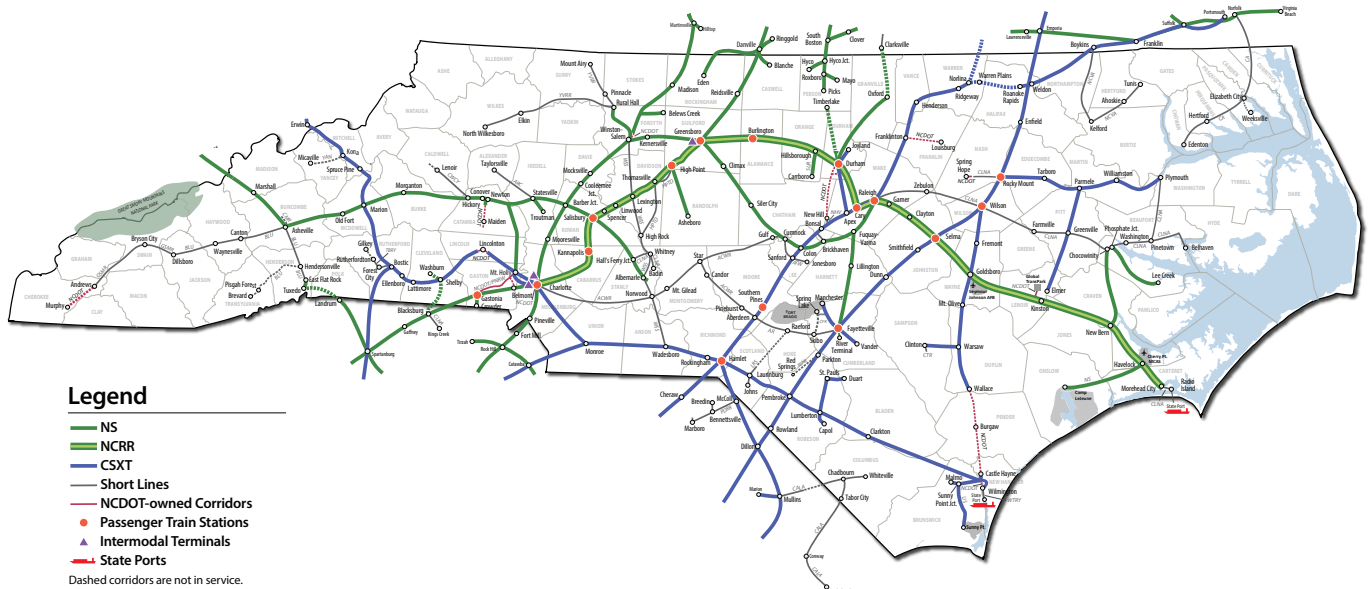
The purpose of the State Rail Plan is to:

- Establish the public vision for the state rail system and support the state's goals and policies to improve freight and passenger rail transportation.
- Analyze and prioritize rail corridors, programs, and proposed projects.
- Propose future improvements and investments, and assess funding options.
- Provide a current inventory of the rail system and identify trends, markets, and needs.
- Describe how programs managed by the NCDOT Rail Division work together with other government agencies, businesses and industries to deliver a comprehensive set of rail services that are integrated into the state's overall transportation system.

Today there are over 3,200 miles of railroad in North Carolina, serving 86 of the state's 100 counties.

North Carolina's Rail System is shown in Figure 1

Figure 1: North Carolina's Rail System

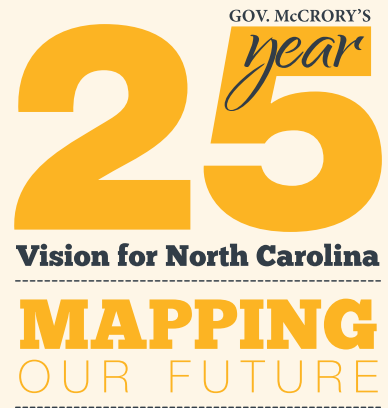


Legend

- NS
 - NCR
 - CSXT
 - Short Lines
 - NCDOT-owned Corridors
 - Passenger Train Stations
 - ▲ Intermodal Terminals
 - State Ports
- Dashed corridors are not in service.

The State Rail Plan is a component of the state's long-standing rail planning practice and Governor McCrory's 25-Year Vision for North Carolina, which includes the following rail-related goals:

- Improve rail connections between military bases and ports
- Intermodal facilities to support freight shipping, and scheduled intermodal service to Port of Wilmington
- Improved rail access to Global TransPark and Port of Morehead City
- Economically competitive rail service to inland ports
- Improve rail and seaport connections to I-95 to serve the Eastern US
- Expand mass transit options, including rail
- Expand access to passenger rail options in all regions of the state



Development of the State Rail Plan

A broad cross-section of railroads, rail-user and agency stakeholders and the general public were engaged throughout the plan development process. This included guidance and input from NCDOT staff, as well as meetings with a Technical Advisory Committee (TAC). TAC members included CSX Transportation (CSXT), Norfolk Southern Railway (NS), North Carolina Railroad Company (NCR), the Railway Association of North Carolina, NC Department of Agriculture and Consumer Services, NC Department of

Commerce, and the NC Center for Global Logistics. The outreach process was designed to incorporate input along with data considerations in assessing existing conditions, evaluating passenger and freight rail corridors and services, and developing plan recommendations. Figure 2 depicts the process used to develop the State Rail Plan. Table 1 shows how initiatives identified in the State Rail Plan will help implement the Governor's 25-Year Vision.

Figure 2: Rail Planning Process

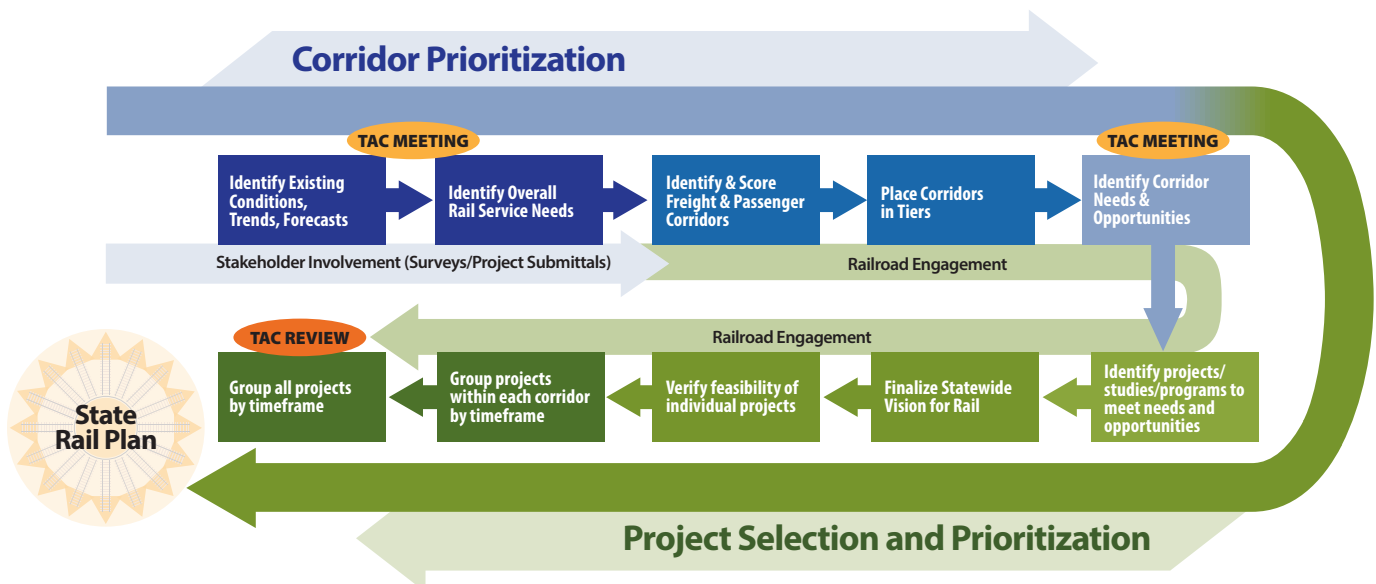


Table 1: Governor’s 25-Year Vision and the State Rail Plan

Region	Regional Solution	Next Steps
Coastal	Develop Intermodal Train Service to the Port of Wilmington	<ul style="list-style-type: none"> Identify capacity and safety needs along CSXT and Wilmington Terminal Railway corridors in Wilmington In partnership with CSXT, study capacity improvements to the CSXT system in Eastern NC that would increase freight capacity Construct bridges at the north gate and container terminal to separate railroad and truck traffic at the Port of Wilmington
	Continue to seek opportunities to develop intermodal facilities along the I-95 Corridor to support freight shipping	<ul style="list-style-type: none"> Evaluate the development of an intermodal facility to serve the Triangle Region and Eastern NC Consider the potential roles for North Carolina State Ports and regional ports for this intermodal service
	Leverage public-private partnerships to complete the development of Radio Island and support enhanced rail access to the Port of Morehead City	<ul style="list-style-type: none"> Evaluate economic feasibility of relocating the NCRR along a new alignment between Morehead City and Havelock, allowing trains to access Radio Island from the east Work with the North Carolina State Ports Authority and Carolina Coastal Railway to develop a loop track at the port Support development of other frontage roads or superstreet intersections to help reduce highway-rail conflicts in Morehead City
Eastern	Support economically competitive rail access to the Global Transpark (GTP) and Port of Morehead City	<ul style="list-style-type: none"> Construct a rail line from GTP in Kinston to the CSXT line parallel to NC 11 in Lenoir County
	Improve connections to the I-95 corridor from rail and seaports to serve markets throughout the Eastern US	<ul style="list-style-type: none"> Provide access to the Mid-Atlantic Industrial Rail Park, a 1,025-acre CSXT-Select Site in Leland, Brunswick County Evaluate feasibility of a new rail crossing of the Cape Fear River to eliminate the need for trains to traverse through Wilmington to access the Port of Wilmington
Central	Improve highway connections and seek economically competitive rail service to inland ports in and around Charlotte	<ul style="list-style-type: none"> Construct siding extension at Stouts in Union County Support the Phase III Expansion of CSXT’s Charlotte Intermodal Terminal Evaluate improvements along the CSXT rail line between Charlotte and Pembroke Relocate the Aberdeen Carolina & Western Railroad in Mecklenburg County
	Improve highway connections and expand airfreight and rail capabilities to support the Triad Logistics Hub	<ul style="list-style-type: none"> Construct rail spur at Piedmont Triad International Airport Convert NS “Roundhouse” property adjacent to Greensboro Intermodal facility into parking and container storage
	Ensure infrastructure plans recognize the development of megasites in the region and support their ability to attract new businesses in targeted industry clusters.	<ul style="list-style-type: none"> Provide access to the 1,000-acre I-85 Corporate Center in Davidson County Conduct a study to identify infrastructure needs required to support industries targeted for the 1,800-acre Chatham-Randolph Megasite Support access to the Project Legacy Megasite in Union County
	Support the expansion of mass transit options in high-growth areas to address the needs of changing demographic, congestion and land development concerns	<ul style="list-style-type: none"> Plan to accommodate potential commuter and light rail in the Triangle, Triad and Metrolina regions. NCDOT will work with the regions as they develop their plans.
Western	Provide industrial access to freight rail lines to accommodate expanding agribusiness and economic development while fully utilizing our multimodal transportation system	<ul style="list-style-type: none"> Evaluate operational improvements to the CSXT freight and intermodal network from TN to Charlotte Reactivate Andrews to Murphy line to accommodate potential freight movement
Comprehensive	Expand access to passenger rail options in all regions of the state to accommodate a changing demographic, address congestion issues and meet regional transportation needs	<ul style="list-style-type: none"> Continued development of the Southeast Rail Corridor Work with project sponsors and stakeholders to evaluate intrastate passenger rail for commuter and light rail in existing and emerging urban/suburban corridors Statewide Thruway Bus service expansion Analysis of capacity and potential of existing stations to accommodate needs, and potential positive economic impacts to surrounding land uses

Economic Impacts of Rail in North Carolina

Freight and passenger rail networks contribute approximately \$1.88 billion in direct economic impacts per year for North Carolina. For freight, this reflects savings in shipping costs (rail vs. truck), pavement costs (i.e. wear and tear on roads), and congestion costs (travel time impacts for other vehicles based on the number of trucks on the road). For passenger rail, this includes direct operator jobs, purchases of goods and services, and tourist spending, as well as pavement and congestion savings from trips that would otherwise be made by automobile.

In addition to the direct economic impacts, broader social impacts generate approximately \$311 million in emissions and safety impacts annually as a result of the truck and

Freight and Passenger Rail directly contribute \$1.88 billion to North Carolina's economy, annually.

auto vehicle miles traveled (VMT) avoided due to the use of freight and passenger rail in the state. These broader social impacts are shown using recommended economic values, but do not translate into spendable dollars in the North Carolina economy. Table 2 summarizes the annual direct economic impacts associated with freight and passenger rail in North Carolina. Table 3 presents direct jobs associated with rail in North Carolina.

Table 2: Economic Impacts of Rail Services in North Carolina

	Freight (2014 dollars)	Passenger (2014 dollars)*
Direct Economic Impacts		
User Cost Savings (Shipper)	\$1,496M	
Amtrak Wages and Purchases		\$89M
Incremental Tourist Spending		\$2M
Great Smoky Mountains Railroad (GSMR) Direct Wages and Purchases		\$6M
GSMR Tourist Direct Spending		\$16M
Pavement Savings**	\$96M	\$4M
Congestion Savings**	\$162M	\$4M
Total	\$1,754M	\$121M
Broader Social Impacts**		
Auto and Truck Emissions	\$118M	\$2M
Auto and Truck Safety	\$173M	\$18M
Total	\$291M	\$20M

Source: AECOM analysis of Class I 2011 Waybill, Amtrak 2012 and 2014, Southeast High Speed Rail, and GSMR 2007 data.

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

** Excludes GSMR impacts.

Table 3: Direct Jobs from Rail in North Carolina

	Freight (2012)	Amtrak (FY2014)	GSMR (2007)	NCRR (2015)
Estimated Direct NC Employment				
	2,600	162	65	13

Sources:

Freight: NC Maritime Strategy Technical Memorandum – North Carolina Railroads Existing and Planned Infrastructure, AECOM May 2012 (for Class Is and short lines).

Amtrak: Amtrak Fact Sheet, Fiscal Year 2014, <http://www.amtrak.com/pdf/factsheets/NORTHCAROLINA14.pdf>

GSMR: Inhyuck "Steve" Ha, Hillary M. Sherman, and Jessica Hollars, "Smoky Mountain Host Highway 19 Corridor Study Phase 1," March 2009.

NCRR: NCRR, 2015.



The Piedmont passenger and NS freight trains side by side in Salisbury. Photo: Marcus Neubacher

Freight Rail System

The state is served by two Class I railroads – Norfolk Southern Railway and CSX Transportation – and 20 short line railroads that connect businesses and industries to the Class I network.*

**Class I railroads are railway companies having annual carrier operating revenues of at least \$467 million, short lines have revenues less than \$37 million. Source: Surface Transportation Board*

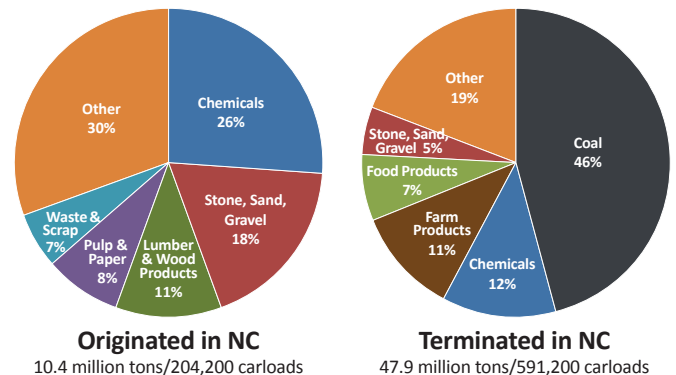


NS freight switches cars at an industry. Photo: Adam Schultz

In addition to the two Class I and 20 short line railroads, the North Carolina Railroad (NCR) Company owns and manages a 317-mile corridor extending from the Port of Morehead City to Charlotte, which is leased and operated by NS. The freight rail network in North Carolina provides service to ports, power plants, mines, military installations, and industries. Freight railroads support jobs for about 2,600 railroad employees in the state.

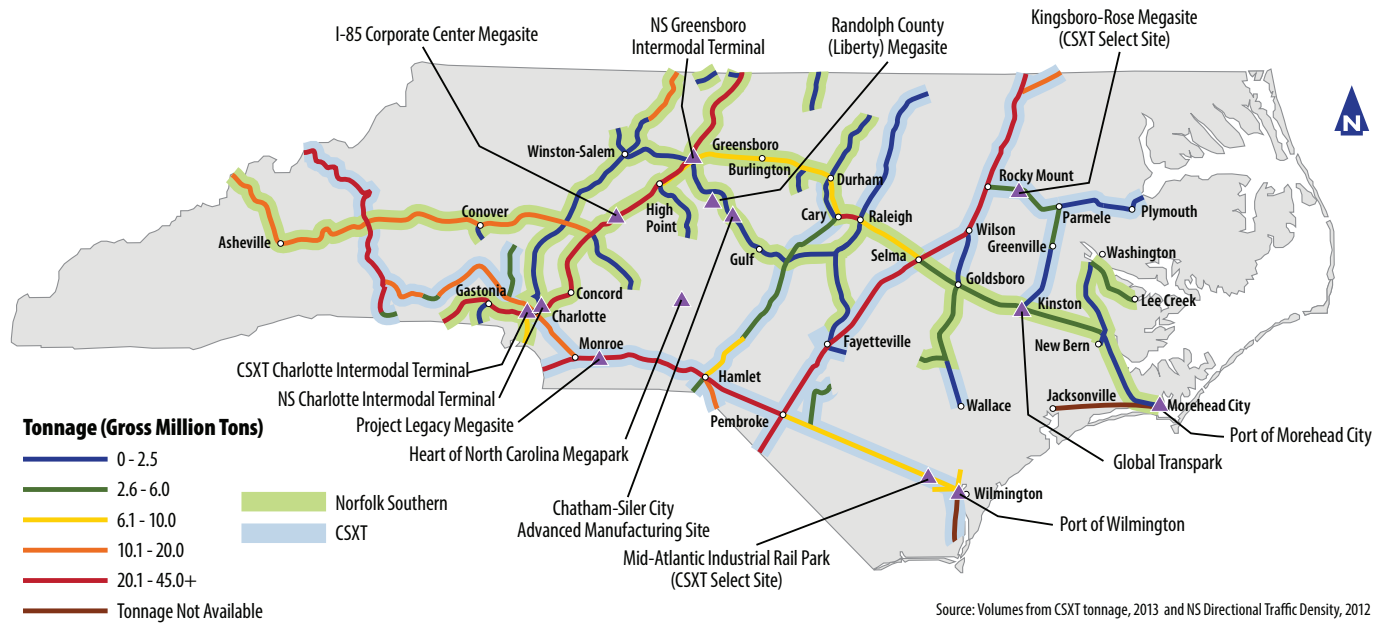
The types and percentages of commodities carried by rail originating and terminating in North Carolina are shown in Figure 3. Class I rail corridors, volumes and key facilities are shown in Figure 4.

Figure 3: 2012 STB Waybill Summary – Commodities Carried by Rail Originating and Terminating in NC*



*Through volumes averaged 38M tons (615,000 carloads) over the last 10 years. Source: Association of American Railroads (2012)

Figure 4: Class I Rail Corridors, Volumes and Key Facilities



Source: Volumes from CSXT tonnage, 2013 and NS Directional Traffic Density, 2012

Freight Rail Trends

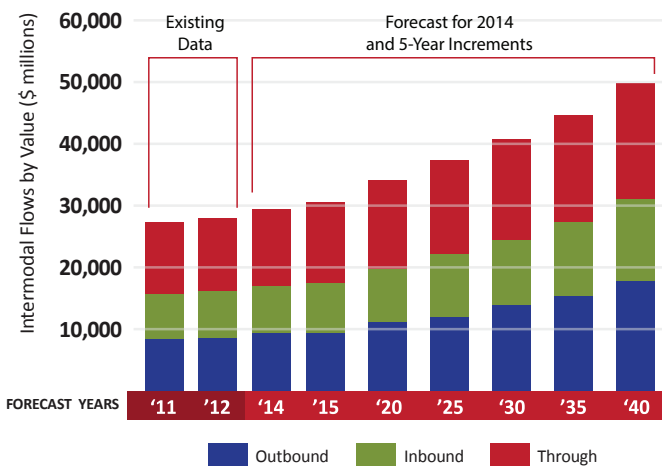
Demand for movement of freight is on the rise. Rail is a critical component in meeting the needs of industries and consumers. Over the next 25 years, the following commodity and rail trends are anticipated.

- Freight can be moved more efficiently by rail and intermodal rail than by truck only. One ton of freight can be moved by rail approximately 413 miles using one gallon of fuel.
- Rail and intermodal rail can be used to help reduce the exclusive use of congested highways to move freight to, from, and within North Carolina.
- Freight demand in North Carolina will increase as population increases. The Progress Report for the National Rail Plan indicates that, on average,

Americans require the freight system to move 40 tons of freight per person, annually.

- Intermodal shipments to and from North Carolina are anticipated to grow by 2.2% and 2.5% per year by value (1.9% and 2.1% by weight).
- Growth in intermodal shipments is anticipated on the existing NS and CSXT networks. This trend is consistent with NS’s Crescent Corridor Initiative and CSXT’s National Gateway Program. Both programs will increase volume on the railroads’ primary north-south corridors through North Carolina.
- Reduction in coal shipments passing through and terminating in North Carolina provides network capacity to accommodate growth in other commodities.
- Domestic production of energy is anticipated to drive growth in manufacturing in North Carolina.
- Growth is expected in high value commodities such as chemicals and plastics, as well as in developing energy-source commodities such as natural gas and wood pellets.
- Increases in North Carolina production of plastics, dyes, scrap metal and aggregate will result in growth of shipments to neighboring states.
- Illinois, Louisiana and Canada are growing in importance for plastics and chemicals shipped to and from North Carolina.
- Shipments of freight originating in North Carolina to the Midwest and through Virginia ports are growing.

North Carolina Intermodal Rail Flows by Value



Freight Rail Needs and Opportunities

After evaluating economic, freight and population data and trends, reviewing related studies, and conducting stakeholder outreach efforts, the following freight rail service needs and opportunities were identified.

As recommended in the Eastern Infrastructure Improvement Study (prepared in accordance with Senate Bill 402 Section 34.23 (2013 General Assembly)), the State of North Carolina should establish the **Secretary of Transportation's Freight Intermodal Advisory Council** to help leverage strategic infrastructure investment to foster economic growth and create jobs. The Freight Intermodal Advisory Council should include, but not be limited to the Board of Transportation and the boards of the NC Department of Agriculture and Consumer Services, Department of Commerce, the Global TransPark and NC State Ports Authority. Private entities with state interest will be invited to join the Council, such as the North Carolina Railroad Company, representatives of the trucking industry, and shippers.



Track Improvements at Port of Wilmington

The Secretary's Intermodal Advisory Council can lead efforts to:

- Cultivate ongoing partnerships between metropolitan planning organizations/rural planning organizations and railroad companies serving each region to build understanding and improve economic development through coordinated transportation and land-use planning.
- Develop a program to restore and add customers to existing lines where volumes have declined, yet some customers remain.
- Increase transload opportunities on congested corridors to divert more truck traffic to railroads by developing a state-level grant program for transload facility development, operation, and maintenance. The program will help optimize siting based on evolving market needs and transport network congestion.

Additional freight rail needs and opportunities are described below.

- Prepare for the emergence of the energy industry in North Carolina that will add freight traffic.
- Continue leading and investing in our nationally-recognized best practice safety program that improves at-grade highway-rail crossings and builds new grade-separated crossings. The program has helped reduce the number of train-car crashes from 244 in 1988 to 51 in 2014.
- Implement the short-term solutions, and plan for the long-term recommendations, presented in the Eastern Infrastructure Study for GTP, the Port of Morehead City and the Port of Wilmington. These solutions include, but are not limited to the following:

Port of Wilmington and Wallace to Castle Hayne

- Continue to preserve the right of way for and seek Department of Defense funding to restore the Wallace to Castle Hayne corridor.

Port of Wilmington

- Continue efforts to work with CSXT to identify actions that will lead to regular rail intermodal service to the Port of Wilmington.
- Pursue implementation of recommendations from the ongoing Wilmington Traffic Separation Study of rail crossing consolidation and safety upgrades to improve safety and efficiency of rail and vehicular flow into Port of Wilmington.
- Pursue environmental, planning and conceptual design studies for the construction of a highway-railroad grade separated access at the North Gate of the Port of Wilmington. Separated access would improve safety, reduce vehicular congestion, and significantly increase rail capacity.
- As future traffic volumes grow at the Port of Wilmington, investigate the feasibility of a new rail bridge across the Cape Fear River from the port area connecting to the rail network in Brunswick County. This would remove port rail traffic from Wilmington.

Global TransPark

- Lease the GTP spur (owned by NCDOT) to a private rail operator.
- Examine GTP's authority to optimize its competitiveness for state and federal grant funds for capital improvement projects.

- Investigate retaining state ownership of the former North Carolina Railroad Company Water Access property in New Bern, currently owned by the Department of Administration, as a potential barge transload facility for oversized cargo loads.
- To prepare for the long term, conduct the environmental analysis for a CSXT spur from the GTP to railroad point “Elmer” in Kinston and obtaining the advance right-of-way.

Port of Morehead City

- In the short term, pursue a super-street style advanced and coordinated traffic plan to reduce rail and truck port traffic conflicts with vehicle and pedestrian traffic on US-70 Arendell Street.
- Implement an on-port loop track to build/break unit trains.
- Establish the GTP to Morehead City Highway and Rail Mobility Corridor and continue to evaluate a potential Northern Carteret Rail and Highway Bypass as market conditions evolve.
- Maintain short line support programs such as the Rail Industrial Access Program and Short Line Infrastructure Assistance Program via Freight Rail & Rail Crossing Safety Improvement funds (FRRCSI) to aid NC industries in accessing Class I rail networks. FRRCSI is currently funded through the NCR Company annual dividend.
- Continue efforts to partner with railroads to evaluate placing an intermodal facility in Eastern NC or Eastern Piedmont to help mitigate future highway congestion’s impacts on the Triangle region’s access to intermodal service(s) that are currently located in Charlotte and Greensboro. A facility may also support agriculture and related industries in Eastern North Carolina and enhance the ability of goods to reach domestic and international markets. Also, support the expansion of existing CSXT and NS intermodal facilities in Charlotte and Greensboro.
- Leverage private sector rail capacity investments and augment them to foster truck-to-rail mode shifts. For example, mobilize collateral efforts as appropriate, such as rail training programs to offset the declining numbers of truck drivers.
- Support the Secretary of Transportation’s initiative to identify rail industry workforce education and training needs and meet them through with the community college system.
- Preserve corridors for future uses.

Freight Rail Projects and Benefits

The State Rail Plan includes projects to improve freight rail systems and goods movement across the state. Freight rail projects along with funding needs by time period and funding sources are presented in Tables 4 and 5 for Class I railroads and short lines, respectively. Near-term projects and major freight studies to be undertaken are noted in Figure 5. Mid and long-range projects are described in detail in the plan and are summarized. The near-term projects on the Class I network are eligible for funding by NCDOT’s Strategic Transportation Investment Program. Identified short line projects in Table 6 are eligible for funding by FRRCSI.



The projects prioritized as near term were analyzed in detail to compare the benefits of each project to its capital and operating costs. A benefit-cost analysis (BCA) ratio is provided in the last column of Table 4 and Table 5. A BCA is a ratio that compares the sum of a project’s or program’s benefits to its cost. Typically, a BCA ratio of 1.0 says that the benefits and costs are equal over the analysis period, and a BCA ratio over 1.0 demonstrates that there are more quantifiable benefits than costs for the project or program. Alternately, a BCA ratio of less than 1.0 may indicate that there are not enough benefits to outweigh the costs, or that all of the benefits are not quantifiable at this time. As train volumes grow and markets change, BCAs should be reassessed to capture all available benefits.



Driving the final spike for the new Greenville Transload track

Table 4: Class I Freight Rail Projects Currently Funded*

Class I Projects and Needs – Funded by Strategic Transportation Investments/Strategic Mobility Formula	Near Term (2015-2019) Funded Projects	BCA Ratio for Near Term Projects	
		Discounted at 7%	Discounted at 3%
New Norfolk Southern Thoroughbred Bulk Terminal (TBT) Facility in Charlotte	\$976,000	1.70	1.97
Container parking/storage adjacent to Norfolk Southern's Greensboro Intermodal Facility (<i>converts former Roundhouse property</i>)	\$1,695,000	10.22	13.11
CSXT - 10,000 foot siding extension at Stouts in Union County. Creates passing siding on segment of single track that benefits freight and intermodal traffic	\$10,600,000	9.87	14.77
Upgrade rail along US 52 in Albemarle (<i>Stanly County</i>) to allow for freight	\$2,126,000	1.10	1.39
Subtotal	\$15,397,000		
Funded by State	\$8,549,000		
Funded by CSXT	\$5,300,000		
Funded by NS	\$1,549,000		

*Cost estimates for these projects based on NCDOT estimates submitted for STI. Costs are in 2014 dollars.

Table 5: Additional Class I Freight Rail Projects *

Project Category	Mid Term 2020-2024	Long Term 2025-2040
CSXT Track Improvements/New Access (1 near-term and 2 long-term projects)	\$3,600,000	\$187,400,000
CSXT Intermodal Terminal and/or Rail Yard Improvements (2 projects)	\$62,000,000	
CSXT Safety/Crossing Safety Improvements/Grade Separations (5 projects)	\$39,781,988	
NS Track Improvements/New Access (4 projects)	\$13,000,000	\$200,000,000
NS Rail Yard Improvements (3 projects)	\$9,000,000	
NS Safety/Crossing Safety Improvements/Grade Separations (11 mid-term and 3 long-term projects)	\$219,115,000	\$57,363,000
Grade separate NS Mainline and CSXT SF Line	\$257,000,000	
Wood pellet and natural gas fracking projects	\$36,000,000	
Preservation of threatened rail lines	\$6,000,000	\$6,000,000
Bridge and structures on NCDOT-owned corridors	\$6,000,000	\$6,000,000
Totals	\$651,496,988	\$456,763,000

* Potential Funding by state and/or federal programs. Estimates for projects based on estimates submitted as candidates for STI and submissions from Metropolitan and Rural Planning Organizations. Costs are in 2014 dollars.

Table 5 presents additional Class I needs that are not currently funded. The projects are presented in aggregate, but are categorized as either on the CSXT or NS network and by project type. Project categories include track improvements and access, intermodal terminal and/or rail yard improvements, and crossing safety and grade-separation projects.

Crossing safety and grade-separation projects that have been implemented through NCDOT's nationally-recognized safety program have had demonstrated success in North Carolina in reducing train-car crashes from 244 in 1988 to 51 in 2014.

The benefits of the other two categories of projects are demonstrated by the benefit-cost ratios of the funded projects of similar types (see Table 4). Investment in improvements to the freight and intermodal network results in operational efficiencies and savings to industries and shippers. In addition, beyond the direct jobs associated with the rail industry, improvements to access and enhancements to the network support indirect jobs, increase volumes on the rail network, and can help support job creation, though there are other factors in the economy that also play a role. As an example, from 1994 to 2013, the Rail Industrial Access Program provided grants to 71 industries; these grants have helped support industries that employ 6,105 people and leveraged matching private investments. The Rail Industrial Access Program is now funded through the Freight Rail & Rail Crossing Safety Improvement fund. FRRCSI also funds the Short Line Infrastructure Assistance Program and

safety projects that help reduce train-car collisions. Due to the multiple benefits of the program, continued investment in FRRCSI is recommended. Other policy and finance recommendations are included on page 17 of this summary.

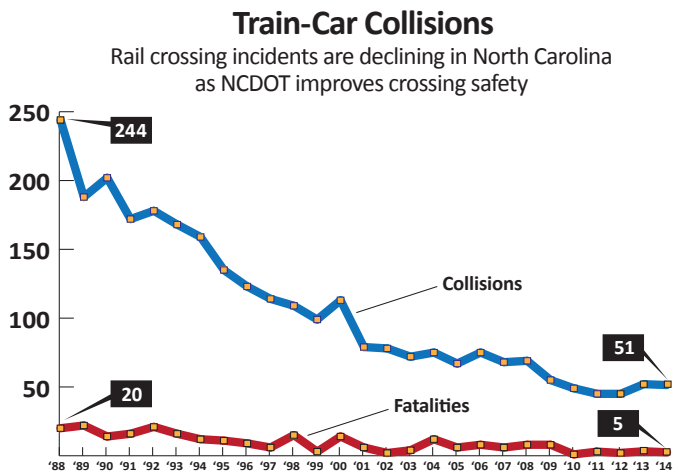


Table 6: Short Line Freight Rail Projects

Short Line Projects and Needs – Eligible for Funding by Freight Rail & Rail Crossing Safety Improvement Fund (FRRCSI)	Funding Needs by Time Period (2014 dollars)			BCA Ratio for Near-Term Projects	
	Near Term 2015-2019	Mid Term 2020-2024s	Long Term 11-20 Years	Discounted at 7%	Discounted at 3%
Bridges*	\$3,524,000	\$3,200,000	\$21,692,000		
Rail*	\$4,838,000	\$11,413,000	\$27,600,000		
Ties and Surfacing*	\$13,834,000	\$14,072,000	\$29,544,000		
Additional Capacity *	\$15,500,000	\$4,650,000	\$1,300,000		
Rail Yards*	\$1,100,000	\$1,600,000	-		
Transloads*	\$2,360,000	\$500,000	-		
Other*	\$2,370,000	\$1,135,000	\$2,070,000		
Relocate ACWR (Mecklenburg County)		\$16,500,000			
Front Street Lead Track Signals and Gates (New Hanover County)	\$900,000			0.76	N/A
Andrews to Murphy Reactivation (Cherokee County)		\$16,400,000			
Loop track at the Port of Morehead City (Carteret County)		\$5,000,000			
Grade Separation at Port of Wilmington North Gate (New Hanover County)**	\$25,000,000			3.37	N/A
Grade Separation at Port of Wilmington Container Gate (New Hanover County)	\$25,000,000			0.15	N/A
Total – Short Line Project Needs	\$94,426,000	\$74,470,000	\$82,206,000		

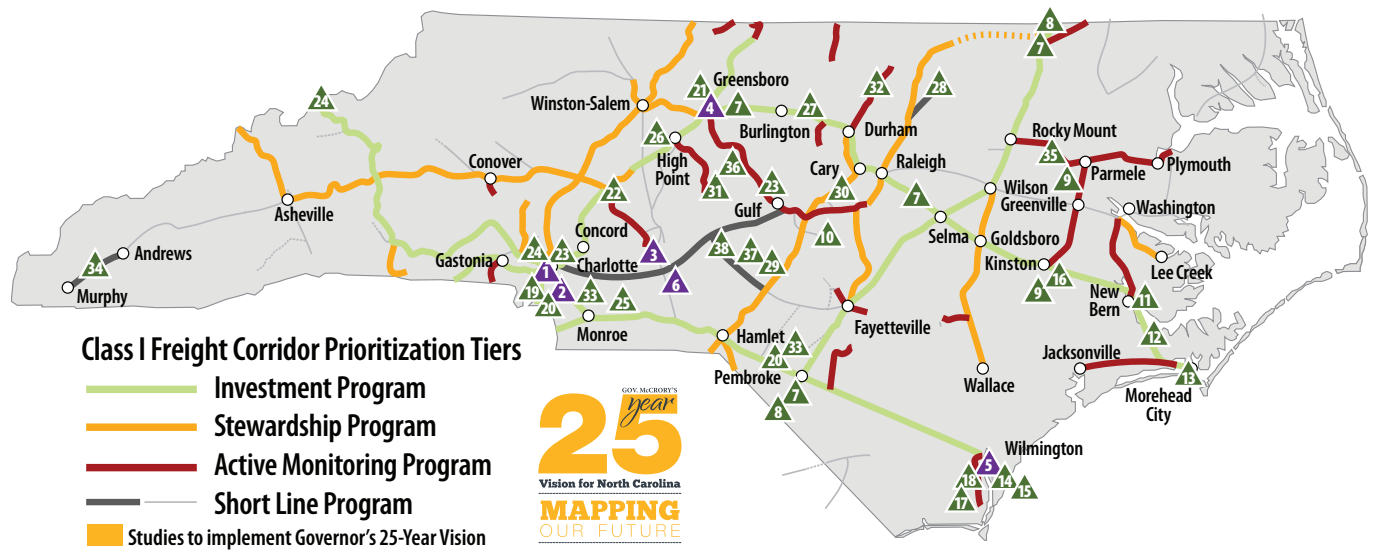
* Based on 11 short line survey responses

** If identified by a Traffic Separation Study, could potentially be funded by highway/rail grade separation funds; North Gate has excellent Benefit Cost ratio based on existing operations. As train volumes increase as port volumes grow, the BCA's for the Front Street and Container Gate projects will improve. These improvements help implement the Governor's 25-Year Vision to enhance access to the ports.

Proposed Freight Rail Studies

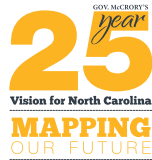
Several freight rail studies have been identified in the State Rail Plan. Freight rail studies that help implement the Governor’s 25-Year Vision are identified in Table 1, and shown in Figure 5 below. More information on these studies and additional studies identified are described in Chapter 5 of the State Rail Plan.

Figure 5: Freight Corridor Priorities to Implement the Governor’s 25-Year Vision



Class I Freight Corridor Prioritization Tiers

- Investment Program
- Stewardship Program
- Active Monitoring Program
- Short Line Program
- Studies to implement Governor’s 25-Year Vision



Freight Program – Near-Term Improvements

1. NS Thoroughbred Bulk Transfer (TBT) Facility in Charlotte
2. CSXT-10,000 ft. Siding Extension at Stouts in Union County
3. Upgrade NS along US 52 in Albemarle in Stanly County
4. Container Parking/Storage Adjacent to NS Greensboro Intermodal Facility (Converts former roundhouse)
5. Grade separation at Port of Wilmington Gates; Front Street Crossing Improvements
6. Expand transload facility in Anson County

Studies to Implement the Governor’s 25-Year Vision and Other Identified Needs

7. Eastern Intermodal – Identify location (along CSXT or NS Corridors) for a potential new intermodal facility that supports agriculture, food manufacturing and industry in Eastern NC, and supports Triangle Region’s access to intermodal service as highway congestion impacts terminals in Charlotte and Greensboro
8. CSXT Capacity Studies in Eastern NC – Freight Movement Passenger Interoperability
9. Emerging Market Needs – e.g. wood pellets
10. Emerging Market Needs – e.g. hydraulic fracturing
11. As part of the GTP to Morehead City Mobility Corridor, assess a rail bypass of New Bern, parallel to proposed US 70 New Bern Bypass in conjunction with NCR
12. As part of the GTP to Morehead City Mobility Corridor, in conjunction with NCR, relocate NCR from Port of Morehead City to Havelock (dependent on substantial increases in port traffic)
13. Implement short-term projects identified in SB 402 studies to reduce highway railroad conflicts in Morehead City and add loop track on port terminal
14. At-grade crossing improvements – WTRY and CSXT accessing the Port of Wilmington
15. Identify capacity needs through Wilmington to enhance connectivity to the Port
16. New rail line from GTP in Kinston to the CSXT line parallel to NC 11 in Lenoir County
17. Provide access to the Mid-Atlantic Industrial Rail Park, a 1,025 acre CSXT-Select Site in Leland, Brunswick County
18. Evaluate feasibility of a new Cape Fear River crossing.
19. Phase III expansion of CSXT’s Charlotte Intermodal Terminal
20. Study operational improvements along CSXT between Charlotte and Pembroke
21. New rail line to serve the Triad Logistics Hub at Piedmont Triad International Airport
22. Provide access to the 1,000 acre I-85 Corporate Center Megasite in Davidson County
23. Identify infrastructure needs required to support industries targeted for the 1,800 acre Chatham-Siler City Advanced Manufacturing Site
24. Identify operational improvements to the CSXT freight and intermodal network from Tennessee to Charlotte; Grade separate CSXT SF Line and NS Mainline in Charlotte
25. Identify infrastructure needs required to support the Project Legacy Megasite in Union County
26. Improvements to Linwood Yard, Pomona Yard, Jamestown siding, Kimberly Clark lead track, and multiple grade separations between Charlotte and Greensboro
27. Multiple grade separation projects between Greensboro and Raleigh
28. Two grade separation projects between Raleigh and Norlina
29. CSXT Automotive Distribution Terminal in Lee County
30. Multiple grade separation projects in Apex and Cary
31. Improve NS siding in Sophia
32. Upgrade NS Corridor from Durham to Oxford
33. Relocate Aberdeen Carolina & Western Railroad in Mecklenburg County
34. Reactivate the Andrews to Murphy line for freight movement and excursions
35. Kingsboro/Rose Megasite, a CSXT-Select Site east of Rocky Mount
36. Identify infrastructure needs to support Randolph County (Liberty) Megasite
37. Identify infrastructure needs to support Heart of NC MegaPark
38. Support Rail Industrial Access and Short Lines through FRRCSI

Passenger Rail System

North Carolina is served by six intercity passenger routes (14 daily passenger trains) with stops in 16 communities. Amtrak also connects to other communities with its Thruway Bus Service connections. Over 70% of North Carolina's population is within a 30-mile radius of a passenger station, with an additional 11% of the state's residents within a 30-mile radius of stops served by Amtrak's Thruway Bus Service.

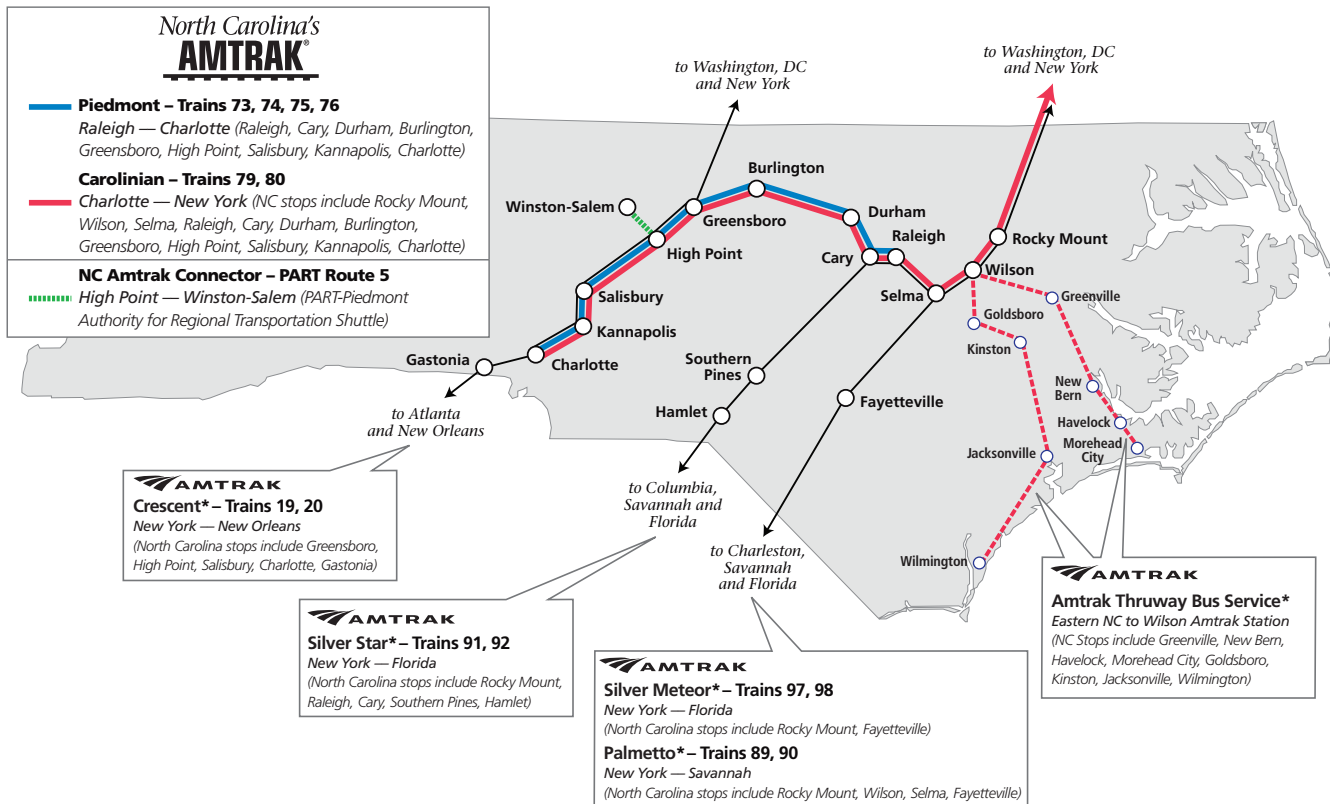
Passenger train service is depicted in Figure 6. These passenger services can be grouped into two categories:

- State-supported *Piedmont* and *Carolinian* services connecting the state's most heavily populated corridor between Raleigh and Charlotte
- Other interstate passenger rail services, consisting of the Amtrak operated *Crescent*, *Silver Star*, *Silver Meteor* and *Palmetto*



Amtrak agent assists passenger in Raleigh

Figure 6: National System Train Services



Passenger Rail Trends

North Carolina has seen healthy growth in the demand for passenger rail as shown in Figure 7. Charlotte has consistently been the busiest station over most of the last 10 years, with the other large metropolitan areas of Raleigh, Greensboro, Cary and Durham rounding out the top five stations. Notable trends include:

- Ridership is up 38% on the *Carolinian* and 280% on the *Piedmont* since 2004, including additional *Piedmont* frequencies.
- The largest ridership increases have been at new or renovated stations.
- The highest revenue producing rail travel markets in North Carolina are to and from the Northeast Corridor.
- Charlotte-Raleigh is the most popular intrastate rail travel market and Raleigh-Washington, DC is the most popular interstate city pair for North Carolina.
- Charlotte is the top destination for interstate and intrastate rail and air travel in North Carolina.

In the last 12 years:

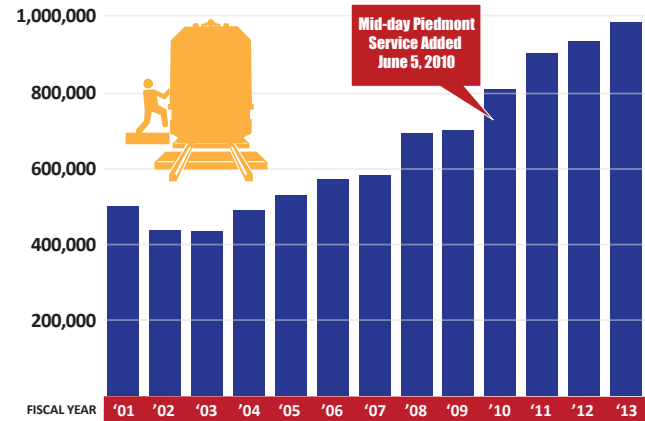
- North Carolina rail ridership has increased 93%, outpacing growth in population and vehicle miles traveled (VMT).
- Statewide population has increased 20%, with the majority of growth in metropolitan areas.
- North Carolina licensed drivers under the age of 25 have increased by 4.6%, reflecting a national trend that millennials are more likely to use transit, ride share, or walk/bike.*
- Per capita VMT has decreased 4.3%.

*"How Millennials Move: The Car-less Trends." National Association of Realtors, August 2, 2012. <http://www.realtor.org/articles/how-millennials-move-the-car-less-trends>. "Millennial Generation Desires Multi-Modal Transportation System." American Public Transportation Association, October 1, 2013. http://www.apta.com/mediacenter/pressreleases/2013/Pages/131001_Millennials.aspx



Passengers board the *Piedmont* in Durham

Figure 7: NC Passenger Rail Ridership, 2001-2013



Note: Ridership consists of all trips to and from North Carolina stations on 14 passenger trains serving the state.

Passenger Rail Needs and Opportunities

After evaluating the existing services data and emerging trends, and conducting stakeholder outreach efforts, the following rail service needs and opportunities were identified for passenger rail markets.



Quality family time on the *Piedmont*

- Partner with local governments, Amtrak and others to extend bus services and explore new commuter and regional rail service to existing and emerging urban/suburban corridors. Metropolitan areas currently not served by passenger rail such as Winston-Salem, Asheville and Wilmington are projected to have a significant share of North Carolina's population growth. Extending rail services will help ensure the economic vitality of these regions.
- Add the 4th and 5th frequencies (3rd and 4th *Piedmont* trains) and stations at points including Hillsborough, Lexington and Harrisburg to serve the growing population in the I-40/I-85 corridors.



Previously passenger trains had to slow down to 45mph in Duke Curve. This curve realignment project allows passenger trains to travel up to 65 mph.

The growth in North Carolina’s urban corridors contributes to the traffic congestion along key highways, and trains are often full during peak travel periods. While growth in per capita VMT may be flat, these critical highway corridors will see the lion’s share of future growth in employment, residents and traffic congestion.

- Improve infrastructure in the Raleigh to Greensboro corridor to increase average speed and add capacity. On-Time Performance (OTP) has dropped for all passenger trains serving the state. This drop in OTP is due to a variety of factors, including capacity issues along key corridors and longer dwell times at stations.
- Continue to work, through regional partnerships, towards implementing the federally-designated Southeast Corridor, including continuing the Virginia-North Carolina Rail Compact and investigating joint operations or expansion of existing state-supported services. A fully operational Southeast Corridor (Charlotte-Raleigh-Richmond-Washington, DC) is projected to have annual revenues that will exceed operating costs—which would provide a basis for a concession or franchise to operate and maintain the line.
- Expand the Virginia-North Carolina Rail Compact to include other states in the federally-designated Southeast Corridor (South Carolina, Georgia, Florida). There is a growing travel market between Charlotte and Atlanta, GA. More frequent and faster passenger rail service to Atlanta is also part of the federally-designated Southeast Corridor long-term plan.
- Develop new multimodal stations in Charlotte and Raleigh, which are the state’s most popular stations and often face overcrowding. Charlotte and Raleigh

have the highest ridership numbers in the state but are the only two stations served by the *Carolinian* that have not seen a substantial renovation or construction of a new station. The Raleigh Union Station is currently under design and will start construction in 2015, and has an opportunity to be a true transportation and economic catalyst for the state’s capital. NCDOT has formed a partnership with the Charlotte Area Transit System to develop Charlotte Gateway Station to meet projected demand. Completion of these “book-end” stations will generate a significant increase in the state’s overall rail passenger ridership.

- Implement a variety of improved connections at stations including transit, pedestrian and bicycle connections, and taxi. Parking shortages at stations illustrate the need for better overall connections.



Boarding a Triangle Transit bus at the Cary Depot.

- Evaluate service operations and collaborate with stakeholders to improve customer service, reduce costs, find other efficiencies, and increase ridership and revenue, including new marketing opportunities.
- Enable station development public-private partnerships to reduce capital and operating costs to the state, and evaluate new financial sources through potential local municipal, Metropolitan/Rural Planning Organizations, and private partnerships to fund existing and future expansion of passenger services. Partnerships with local and regional transportation agencies can help ensure that multimodal stations continue to provide the regional connectivity that is needed for economic growth.
- Evaluate recent federal and state funding programs for passenger rail to see which have been most effective. There is no long-term dedicated rail funding at the federal or state level for passenger rail improvements and operations.

- With Charlotte’s emergence as a major air hub, investigate extending intercity passenger rail service or commuter rail service to Charlotte Douglas International Airport.



The Cary Depot served 89,000 passengers in FY 2013, making it the 4th most active station in North Carolina. This newly-expanded station ranked second in Amtrak’s national Customer Satisfaction Index.

Passenger Rail Projects and Benefits

- Passenger rail projects in the State Rail Plan include near-term improvements to add service frequencies, on-board amenities, stations and connecting services on key passenger rail service corridors and full implementation of the Southeast Corridor, as well as new service to western and southeastern North Carolina over the mid- to long-term (2020-2035). These projects along with anticipated costs, funding source(s), timeframes are shown in Table 7.
- The near term improvements will enhance the speed, convenience and quality of passenger rail accruing a number of transportation capacity, congestion relief, environmental, and economic benefits. Substantial additional benefits will accrue from implementing



A new canopy was added to the Kannapolis Station with ARRA Funds

the Southeast Corridor which will result in major travel time savings, fostering economic development opportunities near stations, diverting highway travel, and contributing to environmental benefits. Implementing passenger service connections to western and southeastern North Carolina will create an interconnected statewide passenger rail network that provides enhanced mobility, economic development, and tourism opportunities.



North Carolina’s Amtrak is a popular choice for college students.

Proposed Passenger Rail Studies

The following passenger rail studies are recommended to explore planned and potential short and long term projects.

New Markets

- Utilize Thruway bus services to grow markets/ridership and build partnerships
- Incrementally develop Western NC and Southeastern NC service in partnership with local governments

Long-Range Studies

- Evaluate interstate rail travel markets including Greensboro to Washington, DC via Lynchburg, VA, and Raleigh to Hampton Roads, VA
- Assess regional rail travel markets including Charlotte to Wilmington, Raleigh to Morehead City and Raleigh to Greenville
- Analyze the capacity and economic potential of existing stations to accommodate projected uses for the next 25 years

Table 7: Passenger Rail Projects

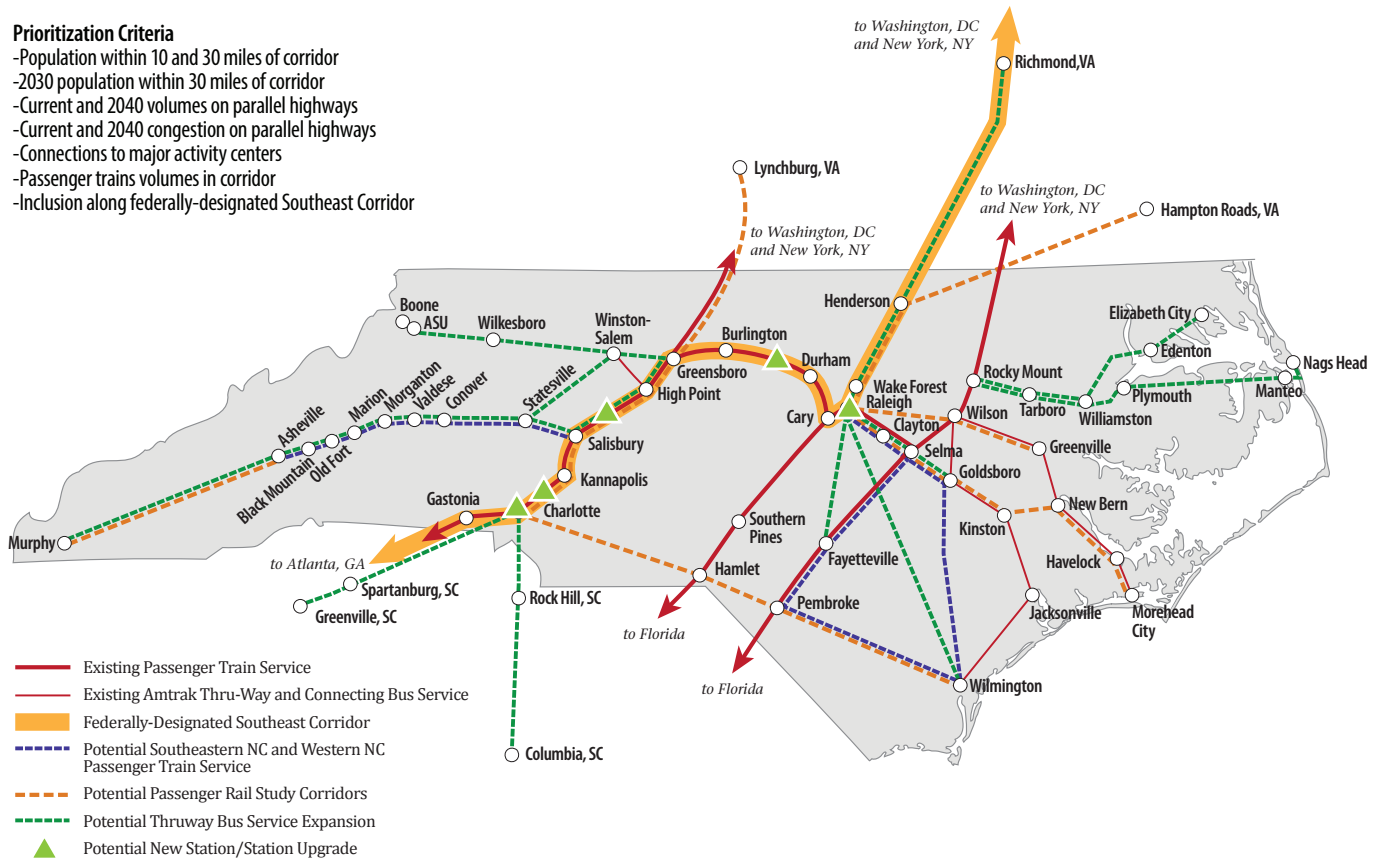
Program	Cost (2014 dollars)	Funding Source(s)	Timeframe	BCA Ratio	
				Discounted at 7%	Discounted at 3%
Southeast Corridor – Service Improvements					
Wi-Fi on <i>Piedmont</i> – Add Wi-Fi to 20 cars	\$630K	State Rail Program	2015-2016	2.44	3.15
Positive Train Control (PTC) – installed on 8 locomotives, 5 cab control units (CCUs), and 4 spares, plus infrastructure to support PTC	\$2.125M	State Rail Program	2016		
Ongoing maintenance for PTC		State Rail Program	2016-future		
Hillsborough Station, track – Construct station and platform	\$8.4M	STI/State Rail Program, Local	2018	.52	0.69
Fourth and Fifth frequencies – New equipment (<i>locomotive, communications control unit, lounge cars, and coach cars</i>) to add a 5th frequency and expand Capital Yard Mechanical Facility, including extending north and south lead tracks	\$35.4M	Federal, CMAQ, State Rail Program	2017-2018 (4th frequency) 2019 (5th frequency)	4th 5.44 5th 6.63	4th 5.16 5th 9.25
Ongoing maintenance (<i>4th > 2017; 5th > 2019</i>)		State Rail Program	2017-future		
New equipment to replace existing <i>Carolinian</i> trainsets that are nearing the end of their service life	\$76.6M	Federal (Amtrak), State (through payments for state supported services)	2020-2035		
New Stations at Lexington and Harrisburg and associated track improvements	\$237.4M	Federal, STI/Local Funds	2020-2035		
Charlotte Gateway Station – new/relocated station and associated track improvements	\$210M	FTA grant, STI/Local funds	2020-2035		
Ongoing maintenance and operations		State Rail Program	2020-future		
Southeast Corridor – Full Implementation					
Full Southeast Corridor Implementation (<i>Raleigh-Richmond</i>)	\$3.8B	Federal, State	2035		
Ongoing maintenance and operations		State Rail Program	2035-future		
Western North Carolina Services					
Western NC Thruway Bus Service – Partner with Amtrak to implement Thruway bus service between the Piedmont area of NC and Asheville	N/A	Amtrak	2016		
Western NC Passenger Service* – Add new connecting rail service between Salisbury and Asheville	\$405.3M	Federal, State	2020-2035		
Andrews to Murphy	\$16.4M	Federal, State	2020-2024		
Ongoing maintenance and operations		State Rail Program	2035-future		
Eastern/Southeastern North Carolina Service					
Station improvements (<i>Fayetteville, Wilson, Selma</i>) to accommodate growing ridership	\$2.5M	Federal, State	2018-2025		
Southeastern NC Thruway Bus Service – Partner with Amtrak to expand Thruway Bus Service to Wilmington and other markets (<i>currently provide thruway bus service between Wilson-Wilmington</i>)	N/A	Amtrak	2018		
Southeastern NC Passenger Service* (<i>Raleigh to Wilmington</i>)	\$262.5M	Federal, STI/State Rail Program, Local Funds	2020-2035		
Ongoing maintenance and operations		State Rail Program	2035-future		
Charlotte to Northeast via Lynchburg, Va					
New service to connect Charlotte to Northeast via Lynchburg, VA*	\$35.6M	Federal, STI, State, Local	2020 to 2035		

* Previous studies must be updated in coordination with host railroads to identify specific routes and improvements.

Figure 8: Passenger Corridor Priorities to implement the Governor’s 25-Year Vision

Prioritization Criteria

- Population within 10 and 30 miles of corridor
- 2030 population within 30 miles of corridor
- Current and 2040 volumes on parallel highways
- Current and 2040 congestion on parallel highways
- Connections to major activity centers
- Passenger trains volumes in corridor
- Inclusion along federally-designated Southeast Corridor



Policy and Finance Recommendations

Rail helps support North Carolina’s economy. Freight rail operations offer a cost competitive mode for the state’s shippers and reduce emissions, congestion, and highway maintenance. Passenger rail provides an alternative to using congested highway corridors and improves safety for travelers who divert from auto travel while increasing the accessibility for the state’s populations to jobs, education, and recreational opportunities. These benefits are built on cumulative past investments in rail infrastructure projects and are realized through strategic partnerships with public and private entities. Recognizing the value of rail service to North Carolina’s economy, a variety of local communities and stakeholders have identified candidate investments to maintain and foster the future growth. Given this interest, an exploration of whether changes to existing rail funding programs could make them more flexible, as well as potential sources of new funding for rail investment may be warranted.

Existing Federal Programs

- Support reauthorization of the Passenger Rail Investment and Improvement Act of 2008 (PRIIA), which includes grants for safety improvements along rail corridors, passenger rail corridor development, and addressing congestion bottlenecks.
- Support long-term reauthorization of MAP-21 and appropriations for associated funding programs such as the Congestion Mitigation and Air Quality (CMAQ) program, Railway/Highway Crossing Hazard Elimination grants, and Rail Line Relocation and Improvement Capital Grants, which have provided North Carolina with funding for relocating freight lines that eliminate congestion and rail/street at-grade conflicts within downtowns and urban areas.
- Support expansion of the Transportation Investment Generating Economic Recovery (TIGER) grant program and annual appropriations.

- Support use of Railroad Rehabilitation & Improvement Financing (RRIF) loans from the FRA to finance development of railroad infrastructure. Direct loans can fund up to 100% of a railroad project with repayment periods of up to 35 years. Railroads, state and local governments are eligible.
- Support reauthorization of the Rail Safety Improvement Act, which includes grants for rail safety technology.
- Support action on the National Freight Network Trust Fund bill, proposed under the US House Bill 5101.



Great Smoky Mountain Railroad bridge

Existing State Programs

- Continue the Freight Rail and Rail Crossing Safety Improvement Fund (FRRCSI) funding of the Short Line Infrastructure Assistance Programs.
- Alter FRRCSI eligibility requirements to include short lines that do not carry freight. The Great Smoky Mountain Railroad is a tourist/excursion railroad providing economic benefits in Western North Carolina. However, since it does not have a freight customer the passenger service is not eligible for FRRCSI funds, the only source of state funding for short line railroads.
- Create an ongoing and available funding mechanism for purchasing abandoned or inactive rail corridors or right of way required to preserve the option for future freight or passenger service. Rail corridors are difficult, if not impossible to reassemble if they are not preserved. North Carolina needs a source of funding to secure inactive corridors such as the CSXT S line, which is needed for the Raleigh to Richmond portion of the Southeast Corridor project, and others that provide transportation alternatives.
- Allow greater funding flexibility for NCDOT to match federal grants.

- Explore potential to revise the state's public-private partnerships legislation to better allow for passenger rail projects. Private developers have expressed interest in partnerships for constructing new passenger train stations in Charlotte and other cities.



Crossing improvement

Illustrative Funding Programs from Other States

- Virginia has expanded its passenger rail program using a portion of the state's sales tax dedicated to passenger rail operations and maintenance (\$44M annually in 2014) and a 3% vehicle rental tax to fund rail capital improvements (\$27M annually).
- Wisconsin operates a revolving loan fund for private rail infrastructure improvements.
- Georgia proposed the creation of a Goods Movement Investment Fund, to have three revenue sources: diesel fuel tax paid by the railroads, railroad property lease income, and a penny gas tax.

Other Potential Funding Sources

- Parking and station use fees
- Local funding to support extensions to passenger rail services
- Local (municipal) funding to cover operating costs of new/extended passenger services
- Tax increment funding based on increased property values resulting from the additional Raleigh to Charlotte train frequencies to fund operations and maintenance of these services
- Exemption of railroads from state gross earnings tax if money saved is used for capital expenditures
- Tax incentives for railroad intermodal facilities
- Federal tax credit for short line maintenance

North Carolina's Rail Vision and Goals

The goals and objectives for the State Rail Plan support the mission and goals of NCDOT and the Rail Division. The NCDOT Rail Division's Mission is the "...safe and efficient movement of people and goods on North Carolina's railroads through freight, passenger and safety programs, supporting job creation and economic growth." Table 8 lists the Goal Areas, Vision Statements and Objectives. A map of North Carolina's Comprehensive State Rail Plan is provided in Figures 5 and 8.

Table 8: State Rail Plan Vision, Goals and Objectives	
Goal Area/ Vision Statement	Objectives
Goal Area 1 – Safety & Security Vision: A rail system that safely moves people and products.	1.1 Reduce the number of rail-related crashes, including pedestrian trespassers 1.2 Maintain safety and mobility during emergencies 1.3 Prevent harm from train crashes and incidents and, when incidents occur, address them safely and efficiently 1.4 Improve the security of North Carolina's rail system 1.5 Maintain equipment properly
Goal Area 2 – Stewardship Vision: A rail system that is operated and improved with the greatest benefit and the least impact feasible to the natural and human environment.	2.1 Minimize the negative impacts of rail operations and new rail projects on the natural and human environment 2.2 Maximize the positive impacts of new rail projects on the natural and human environment 2.3 Increase the understanding and support of rail among policy makers and the public as a mode of transportation that supports economic growth while limiting the impact of increased transportation demand on air quality, energy use, and safety
Goal Area 3 – Preservation Vision: A rail system that is preserved for current and future use.	3.1 Maintain and improve the viability of short line railroads and associated industries 3.2 Preserve opportunities for future passenger or freight rail service to leverage existing corridor assets and capacity 3.3 Preserve railroad corridors for future transportation use
Goal Area 4 – System/Interoperability Vision: A rail system with connecting corridors and facilities that promotes the efficient movement of people and goods and supports economic growth and development.	4.1 Move people and goods more efficiently 4.2 Maintain and improve connectivity of the rail system, supporting economic growth 4.3 Ensure intercity, commuter, and transit services work as a cohesive system and are planned in a manner that accommodates existing and future freight movement
Goal Area 5 – Freight Vision: A rail system that provides safe, reliable, efficient, and well-used rail freight service.	5.1 Increase the efficient use of freight rail service 5.2 Increase the freight customer base 5.3 Promote economic development
Goal Area 6 – Passenger Vision: Provide a system of intercity passenger services connecting North Carolina's major metropolitan areas and other communities to destinations within the state and along the East Coast.	6.1 Increase ridership and enhance the economic performance of the state's passenger rail network 6.2 Provide passenger service or connections to intercity passenger service, from large growth areas to major East Coast destinations and feeder stops
Goal Area 7 – Commuter Vision: A rail system that connects suburbs and bedroom communities of major employment centers with commuter rail service.	7.1 Support local plans and policies to implement commuter rail service
Goal Area 8 – Planning Vision: State rail planning addresses the collective needs of the State, its citizens, industries, traveling public, and transportation providers.	8.1 Support local plans and policies to maintain and improve commuter rail service to support business and employment growth