



Southeast High-Speed Rail System (Source: Virginia DRPT)

The Southeast high-speed rail system is a proposed system containing 1,699 miles of routes in seven segments connecting major metropolitan areas across five states in the Southeast U.S.: Florida, Georgia, North Carolina, South Carolina, and Virginia. All seven segments of the Southeast high-speed rail system have advanced to the

Planning/Environmental stage. All seven segments are part of the federally-designated Southeast High-Speed Rail Corridor. The proposed system is based on incremental improvements to existing freight railroad rights-of-way, with maximum train speeds projected up to 110 mph.

SYSTEM DESCRIPTION AND HISTORY

System Description

The Southeast high-speed rail system consists of seven segments, as summarized below.

Southeast High-Speed Rail System Segment Characteristics

Segment Description	Distance	Segment Status	Designated Corridor?	Segment Population
Washington, D.C., to Richmond, VA	118 Miles	Planning/Environmental	Yes	6,840,421
Richmond, VA, to Raleigh, NC	162 Miles	Planning/Environmental	Yes	2,466,890
Raleigh, NC, to Charlotte, NC	173 Miles	Planning/Environmental	Yes	4,406,245
Charlotte, NC, to Macon, GA	365 Miles	Planning/Environmental	Yes	8,573,469
Macon, GA, to Jacksonville, FL	331 Miles	Planning/Environmental	Yes	2,037,870
Raleigh, NC, to Jacksonville, FL	446 Miles	Planning/Environmental	Yes	3,854,934
Richmond, VA, to Hampton Roads, VA	104 Miles	Planning/Environmental	Yes	2,929,934

The five segments of the Southeast high-speed rail system between Washington, D.C., and Jacksonville, FL (via Raleigh, Charlotte, Atlanta, and Macon) comprise a mainline totaling 1,149 miles encompassing a combined population of 19,945,823 in 2010. Major metropolitan areas along this mainline include Richmond, VA; Durham, NC; Greensboro, NC; Greenville, SC; and Savannah, GA, in addition to the cities previously mentioned. The two most-heavily populated segments are the Charlotte to Macon segment (8,573,469 in 2010) and the Washington, D.C., to Richmond segment (6,840,421).

The Raleigh, NC, to Jacksonville, FL, segment is 446 miles in length and includes the communities of Columbia, SC, and Savannah, GA, along the route. This segment provides a more direct route between Raleigh and Jacksonville, being almost 400 miles shorter than the more circuitous route passing through Charlotte, Atlanta, and Macon. The total population of communities along this segment that are currently served by the Amtrak Silver Star route along the same corridor was 3,854,538 in 2010.

The Richmond, VA, to Hampton Roads, VA, segment of the Southeast high-speed rail system connects the Southeast high-speed rail system mainline in Richmond with the Hampton Roads region of Virginia. The Richmond to Hampton Roads segment is 104 miles in length. The total population of communities being considered for proposed high-speed rail stations along these segments was 2,929,934 in 2010. The population is the same for both segments because these two segments serve the same Metropolitan Statistical Areas along their routes.

Development of high-speed intercity passenger rail service in all seven segments of the Southeast high-speed rail system is primarily based on incremental improvements to existing freight railroad right-of-way (typically either CSX or Norfolk Southern), including the re-activation of abandoned or inactive right-of-way in some portions.

System History

High-speed intercity passenger rail planning for the Southeast high-speed rail system has been on-going since the mid-1990s with the creation of the federally-designated Southeast High-Speed Rail Corridor in 1992. In 1994, the States of Virginia, North Carolina, South Carolina, and Georgia formed a four-state coalition to facilitate high-speed rail development in the Southeast corridor. The Federal Railroad Administration's *High-Speed Ground Transportation for America* report, released in 1997, emphasized the strong potential for high-speed rail development in the Southeast due to the region's population growth and the connectivity with the Northeast Corridor via Washington, D.C., that would result from high-speed rail development in the region.

Much of the planning activities completed to date in the Southeast high-speed rail system have focused on the 453-mile portion of the system between Washington, D.C., to Charlotte, NC. Feasibility studies outlining investment needs to implement high-speed rail between Washington, D.C., and Charlotte were completed for the Washington, D.C., to Richmond segment in May 1999 and the Richmond to Charlotte portion in January 2004. In October 2002, the Tier 1 EIS for the Washington, D.C., to Charlotte portion was approved and a Record of Decision supporting



Richmond, Virginia

the preferred alternative was announced. The Draft Tier 2 EIS for the Richmond to Raleigh segment was completed in May 2010 and a report documenting the recommended alternative was released in final form in May 2012. The State of Virginia is currently implementing a Tier 2 EIS study for the Washington, D.C., to Richmond segment, complementing other investments that have been made in this segment to prepare for high-speed rail service. Implementation of high-speed passenger rail in the Raleigh to Charlotte, North Carolina, segment has focused on completing individual projects designed to increase train capacity and operating speeds. Environmental documentation for this segment is taking place at the individual project level, guided by the findings from the approved Tier 1 EIS.

South of Charlotte and Raleigh, North Carolina, high-speed passenger rail planning activities have progressed at a much slower pace. Feasibility studies were completed for the Charlotte, NC, to Macon, GA (via Atlanta), segment by a private consultant in May 2004 and the U.S. DOT Volpe National Transportation Systems Center in August 2008. In March 2012, the Georgia Department of Transportation (GDOT) released a comprehensive planning study examining the feasibility of high-speed rail service in three corridors radiating out of Atlanta, Georgia. One of the corridors examined in this study was the Atlanta to Jacksonville corridor, which encompassed the Atlanta

to Macon portion of the Charlotte to Macon segment and the entire Macon to Jacksonville segment, totaling approximately 435 miles. The study included ridership and revenue forecasts, capital and operating cost estimates, and financial analysis for several scenarios of high-speed rail service between Atlanta and Jacksonville. A feasibility study identifying investment needs to implement high-speed rail service through South Carolina on the Charlotte to Macon and Raleigh to Jacksonville segments of the Southeast high-speed rail system was completed by the South Carolina Department of Transportation in February 2001. However, limited progress has been made on the Raleigh to Jacksonville segment since this study.

Planning in the Richmond to Hampton Roads, VA, feasibility studies that were completed in 1999 (Newport News) and 2002 (Norfolk/South Hampton Roads). Current planning activities are being undertaken for this segments as part of the Richmond/Hampton Roads Passenger Rail Project, administered through the Virginia Department of Rail and Public Transportation. A Final Tier 1 EIS documenting the preferred alternative rail corridor was completed and approved in August 2012 and a Record of Decision was published in December 2012.

Federally-Designated Corridors

All seven segments in the Southeast high-speed rail system are a part of the federally-designated Southeast High-Speed

Rail Corridor. The Southeast High-Speed Rail Corridor was one of five federally-designated corridors authorized by the *Intermodal Surface Transportation Efficiency Act of 1991* (ISTEA) in December 1991. The designation was made official in October 1992. Extensions of the Southeast High-Speed Rail Corridor were authorized in December 1995 (Richmond to Hampton Roads, VA), December 1998 (Charlotte, NC, to Greenville, SC; Atlanta to Macon, GA; Raleigh, NC, to Columbia, SC; and Savannah, GA, to Jacksonville, FL), and October 2000 (Macon to Jesup, GA).

Existing Intercity Passenger Rail Service

Existing intercity passenger rail service in the Southeast high-speed rail system includes the Amtrak Northeast Regional, Piedmont, and Carolinian corridor trains as well as the Crescent, Palmetto, and Silver Service long-distance trains. New Amtrak service from Richmond, VA, to Norfolk, VA, started in December 2012.

Sources: 2010 U.S. Census, Washington, D.C., to Charlotte Tier 1 Environmental Impact Study, Technical Monograph: Transportation Planning for the Richmond-Charlotte Rail-

road Corridor, Commonwealth of Virginia ARRA Track 2 High-Speed Rail Funding Application, Richmond, VA to Raleigh, NC Tier 2 Draft Environmental Impact Statement, Evaluation of High-Speed Rail Options in the Macon-Atlanta-Greenville-Charlotte Rail Corridor, GDOT High Speed Rail Planning Services Final Report, Richmond/Hampton Roads Passenger Rail Project Tier 1 Draft EIS, Federal Railroad Administration, Amtrak System Timetable Fall 2011/ Winter 2012

ESTIMATED SYSTEM COSTS AND FUNDING SOURCES

Estimated System Costs

Feasibility studies and environmental impact statements provided capital cost estimates for the Southeast high-speed rail system. The estimated capital costs on a per-mile basis are shown below.

Projected Funding Sources

No funding sources have been identified for further development of this system beyond the incremental improvements described in the following section.

Southeast High-Speed Rail System Capital Cost Estimates

Segment Description/Study Name/Year	Maximum Speed/ Scenario	Estimated Capital Cost per Mile (\$ Millions)
Washington, D.C., to Charlotte		
• Tier 1 EIS Washington, D.C., to Charlotte (2002)	110 mph	\$5.8 – \$5.9
• FRA Technical Monograph Richmond to Charlotte (2004)	110 mph	\$2.9
• Virginia ARRA Track 2 Application (2009)	110 mph	\$15.7
• Draft Tier 2 EIS Richmond to Raleigh (2010)	110 mph	\$13.4
• NEC Master Plan Washington, D.C., to Richmond (2010)	110 mph	\$34.5
Charlotte-Atlanta-Macon		
• Volpe Center Study (2008)	90-110 mph	\$4.9
• Volpe Center Study (2008)	125 mph	\$5.6
• Volpe Center Study (2008)	150 mph Diesel	\$6.5 – \$6.9
• Volpe Center Study (2008)	150-200 mph Electric	\$9.2
Richmond to Hampton Roads Tier 1 EIS (2010)		
• Richmond, VA, to Newport News, VA	90 mph	\$4.5
• Richmond, VA, to Newport News, VA	110 mph	\$5.8
• Richmond, VA, to Norfolk, VA	90 mph	\$4.6
• Richmond, VA, to Norfolk, VA	110 mph	\$5.2
Atlanta to Jacksonville		
• GDOT High Speed Rail Planning Study (2012)	Shared Use 90-110 MPH Non-Electric	\$11.5
• GDOT High Speed Rail Planning Study (2012)	Dedicated Use 150-220 MPH Electric	\$41.3
• GDOT High Speed Rail Planning Study (2012)	Hybrid High Performance 130 MPH Non-Electric	\$22.8

Recent Funding Awards

The Southeast corridor states have received funding awards in recent years associated with further development of the existing passenger rail service and planning for future high-speed service. These awards include:

- Georgia: \$4,100,000 from FY 2010 high-speed rail appropriations for the completion of a service development plan and preliminary EIS for the Charlotte, NC, to Atlanta, GA, corridor.
- Georgia: \$250,000 from FY 2009 high-speed rail appropriations for the completion of a feasibility study for an intercity passenger rail connection between Macon, GA, and Jacksonville, FL. This feasibility study was completed in March 2012.
- North Carolina: \$546,560,839 from the *American Recovery and Reinvestment Act of 2009* funds for various improvement projects that will increase rail capacity and support the implementation of a third and fourth daily frequency on the Raleigh to Charlotte segment.
- North Carolina: \$22,000,000 from FY 2010 high-speed rail appropriations for individual projects to increase rail capacity and support the development of a new station in Charlotte, NC.
- North Carolina: \$4,000,000 from the *American Recovery and Reinvestment Act of 2009* funds for the completion of project-level environmental review for the Richmond, VA, to Raleigh, NC, segment.
- Virginia: \$74,840,119 from the *American Recovery and Reinvestment Act of 2009* funds for the Arkendale to Powell's Creek project.
- Virginia: \$44,308,000 from FY 2010 high-speed rail appropriations for the Southeast High Speed Rail Richmond Area to Potomac Segment (RAPS) Tier II NEPA/Preliminary Engineering Project.

Sources: *Washington, D.C., to Charlotte Tier 1 Environmental Impact Study, Technical Monograph: Transportation Planning for the Richmond-Charlotte Railroad Corridor, Commonwealth of Virginia ARRA Track 2 High-Speed Rail Funding Application, Richmond, VA to Raleigh, NC Tier 2 Draft Environmental Impact Statement, Northeast Corridor Infrastructure Master Plan, Evaluation of High-Speed Rail Options in the Macon-Atlanta-Greenville-Charlotte Rail Corridor, GDOT High Speed Rail Planning Services Final Report*

TRANSPORTATION SYSTEM IMPACTS

Ridership Estimates

Ridership estimates for the Washington, D.C., to Charlotte portion of the Southeast high-speed rail system were developed in 2000 as part of the Tier 1 EIS for that corridor and updated in 2004 for the Richmond to Raleigh Tier 2 EIS. The Tier 1 EIS ridership forecast estimated ridership for the Washington, D.C., to Charlotte portion to be between 1,612,000 and 1,644,900 annual passengers by the year 2025. The Tier 1 EIS ridership forecasts were updated for the Tier 2 EIS, revising the year 2025 ridership estimates to between 1,269,100 and 1,273,800 annual passengers. Both estimates were developed for a maximum train speed of 110 mph. The May 2010 *Northeast Corridor Infrastructure Master Plan* estimated that the number of daily round-trips in the Washington, D.C., to Richmond segment would increase from the current 9 to 20 by the year 2030, with ridership estimated to increase from the current 1.449 million to 5.118 million, also by the year 2030.

The existence of an attractive high-speed rail service north of Charlotte would generate additional ridership in the Charlotte–Atlanta–Macon corridor on the order of 100,000 annual trips, or an increase of approximately 9 to 18 percent.

Ridership forecasts for the Charlotte–Atlanta–Macon portion of the Southeast high-speed rail system were developed in August 2008 by the Volpe Center. Annual ridership was estimated for a buildout year of 2025 for train speeds ranging between 90 and 200 mph and six train stopping patterns, also taking into account the increased connectivity resulting from implementation of high-speed rail service north of Charlotte. For the projected buildout year, estimated ridership ranged between 443,300 and 822,100 for the 90 mph scenario, between 452,900 and 834,600 for the 110 mph scenario, and between 557,500 and 985,200 for the 125 mph scenario with high-speed rail service north of Charlotte. Increasing service speeds from 125 mph to 150 mph resulted in an estimated ridership increase of approximately 6 percent, while increasing speeds from 150 mph to 200 mph resulted in an increase of approximately 5 percent. The study noted that the existence of an attractive high-speed rail service north of Charlotte would generate



Charlotte, North Carolina

additional ridership in the Charlotte–Atlanta–Macon corridor on the order of 100,000 annual trips, or an increase of approximately 9 to 18 percent.

A ridership study for the Atlanta to Jacksonville portion of the Southeast high-speed rail system was completed in March 2012. Three scenarios of high-speed rail service were considered: a “shared use” scenario with 8 daily round-trips and maximum speed of 110 mph, a “dedicated use” scenario with 14 daily round-trips and maximum speeds between 180 and 220 mph, and a “hybrid high performance” scenario with 14 daily round-trips and maximum speeds of 130 mph. Ridership estimates for the year 2030 for each scenario were as follows: shared use scenario, 2,353,000 annual passengers; dedicated use scenario, 2,745,000 annual passengers; and hybrid high performance scenario, 2,402,000 annual passengers.

Annual ridership forecasts for 2025 for the Richmond to Hampton Roads, VA, segments of the Southeast high-speed rail system were developed in May 2009. For the Richmond to Newport News route, ridership estimates ranged between 732,200 and 914,600 for the 90 mph alternative and between 768,000 and 968,400 for the 110 mph

alternative. For the Richmond to Norfolk route, ridership estimates ranged between 727,100 and 886,700 for the 90 mph alternative and between 773,000 and 939,900 for the 110 mph alternative.

Mode Choice

In its application for funding for Track 2 high-speed rail projects from the *American Recovery and Reinvestment Act of 2009*, the Commonwealth of Virginia outlined its plan for the I-95 High-Speed Rail Corridor program, which includes the construction of a third and fourth track between the Potomac River to the Petersburg, VA, area, as well as other improvements. The application reported that these improvements would reduce automobile trips on I-95 by 13 million over the 30-year planning horizon. This reduction in automobile travel would result in a reduction of 2.9 million tons of CO₂ emissions and save more than 467 million gallons of fuel over the same time period. The GDOT Atlanta to Jacksonville feasibility study estimated that by 2035, shared use or dedicated use high-speed rail service could divert 292.15 million and 297.04 million annual vehicle miles, respectively, from parallel corridor highways.

Connectivity with Other High-Speed Rail Systems

The seven segments of the Southeast high-speed rail system connect to three other U.S. high-speed rail systems as follows: the Northeast high-speed rail system in Washington, D.C., the Florida high-speed rail system in Jacksonville, Florida, and the Gulf Coast high-speed rail system in Atlanta, Georgia.

Sources: Washington, D.C., to Charlotte Tier 1 Environmental Impact Study, Richmond, VA to Raleigh, NC Tier 2 Draft Environmental Impact Statement, Northeast Corridor Infrastructure Master Plan, Evaluation of High-Speed Rail Options in the Macon-Atlanta-Greenville-Charlotte Rail Corridor, GDOT High Speed Rail Planning Services Final Report, Richmond/Hampton Roads Passenger Rail Project Tier 1 Draft EIS, Commonwealth of Virginia ARRA Track 2 High-Speed Rail Funding Application

GOVERNANCE

Intercity passenger rail planning and implementation activities in the Southeast high-speed rail system have been

coordinated primarily by the North Carolina Department of Transportation Rail Division and the Virginia Department of Rail and Public Transportation. These two entities were responsible for developing many of the feasibility studies for high-speed passenger rail in the Southeast, including initiating the Tier 1 EIS study for the Washington, D.C., to Charlotte portion in August 1999. In 2004, the two states created the Virginia-North Carolina High-Speed Rail Compact to coordinate planning efforts and advance multi-state high-speed rail initiatives in the Southeast. The compact was authorized by the U.S. Congress in Section 410 of the *Amtrak Reform and Accountability Act of 1997* and established by the state legislatures of Virginia and North Carolina.

Source: North Carolina Department of Transportation Rail Division Website, Virginia Department of Rail and Public Transportation Website, Southeast High-Speed Rail Corridor Project Website

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Prepared for the U.S. Department of Transportation and the Federal Railroad Administration by Parsons Transportation Group, January 2004

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Prepared for the Georgia Department of Transportation, South Carolina Department of Transportation, North Carolina Department of Transportation, and the Federal Railroad Administration by Georgia Rail Consultants, May 2004

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Prepared by the U.S. Department of Transportation, Federal Railroad Administration, and the Virginia Department of Rail and Public Transportation, December 2009

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