# 1 PURPOSE AND NEED FOR THE PROPOSED ACTION

The Southeast High Speed Rail Corridor (SEHSR) is one of five originally proposed high speed passenger rail corridors designated by the US Department of Transportation (USDOT) in 1992.

The North Carolina Department of Transportation Rail Division (NCDOT) and the Virginia Department of Rail and Public Transportation (DRPT), with their federal partners, the Federal Railroad Administration (FRA) and the Federal Highway Administration (FHWA), have been working together since the early 1990s to develop the SEHSR corridor.

These agencies determined, through a series of feasibility studies and modeling, that the SEHSR corridor should be analyzed and implemented using an incremental approach. This approach minimizes impacts to both the human and natural environments by using existing rail infrastructure and rail right of way (ROW) as much as possible. Use of existing infrastructure also reduces the initial capital investment required by the system.

Because of the length of the overall corridor (over 450 miles), a tiered approach was adopted for the required environmental studies.

The Tier I Environmental Impact Statement (EIS) (NCDOT and VA DRPT, 2002) covered the Washington, DC to Charlotte, NC corridor at a program level.

This current document – the Tier II EIS -- includes detailed environmental analysis for the portion of the preferred corridor between Richmond, VA, and Raleigh, NC. Other environmental documentation will be prepared separately for implementation of the remainder of the corridor as appropriate to those improvements.

## 1.1 Project Background

The first study phase - referred to as the Tier I EIS - examined the need for the project and looked at potential impacts on both natural and human environments at a program or corridor level of assessment.

Nine alternative corridors were evaluated, along with a “no build” alternative. Public involvement was critical during this phase with 26 public information workshops and 18 public hearings held in North Carolina and Virginia to solicit feedback about the project. Throughout the Tier I EIS process, meetings with the public, political leaders, planners, resource agencies, railroads and other interested parties were held to obtain input on the project.

The Tier I EIS identified the preferred corridor and the overall project purpose and need. The “no build” alternative was eliminated during this process because it failed to meet the project purpose and need.

A recommendation report was completed in early 2002, indicating that the route with the best potential for high-speed rail service and the fewest environmental impacts would run from Richmond, through South Hill, VA to Norlina, and Raleigh, then on to Greensboro (with a connection to Winston-Salem) and Charlotte, NC. The route follows a combination of existing railroads and preserved rail corridors. It should be noted that service in this corridor extends south of Charlotte to Atlanta and points south; and north of Richmond to Washington DC, New York, and Boston.

The Final Tier I EIS, which outlined why the recommended alternative was selected, was completed in June 2002. FRA and FHWA issued a Record of Decision on the initial environmental studies in October 2002, confirming and approving the preferred corridor for SEHSR, and the project purpose and need. More information about the SEHSR corridor purpose and need and evaluation process can be found on the program's website at www.sehsr.org.

Virginia and North Carolina are now proceeding with the next phase, Tier II, which provides a detailed analysis on the impacts, including detailed design, track location, and bridge and roadway work.

## 1.2 Project Description

The preferred SEHSR study corridor identified in the Tier I EIS runs from Washington, DC, through Richmond, VA, Petersburg, VA, Henderson, NC, Raleigh, NC, and Greensboro, NC, to Charlotte, NC, with a connection to Winston-Salem, NC (NCDOT and VA DRPT, 2002). This Tier II EIS is focused on the portion of the corridor between Richmond, VA, and Raleigh, NC (Figure 1-1).

There is existing freight and passenger rail service operating within the preferred corridor from Petersburg north to Washington, DC, and from Raleigh west to Charlotte, NC. Both states have active rail improvement programs in these portions of the corridor. The planned and anticipated rail improvements in these portions of the corridor are needed for safety, capacity, and congestion management, and thus while they facilitate the overall higher speed rail system, they have independent utility from high speed rail (i.e., they need to be completed whether or not the overall SEHSR system is developed). Each of these projects will have environmental documentation appropriate to the specific action.

Examples of those current and planned projects and their level of environmental documentation are as follows.

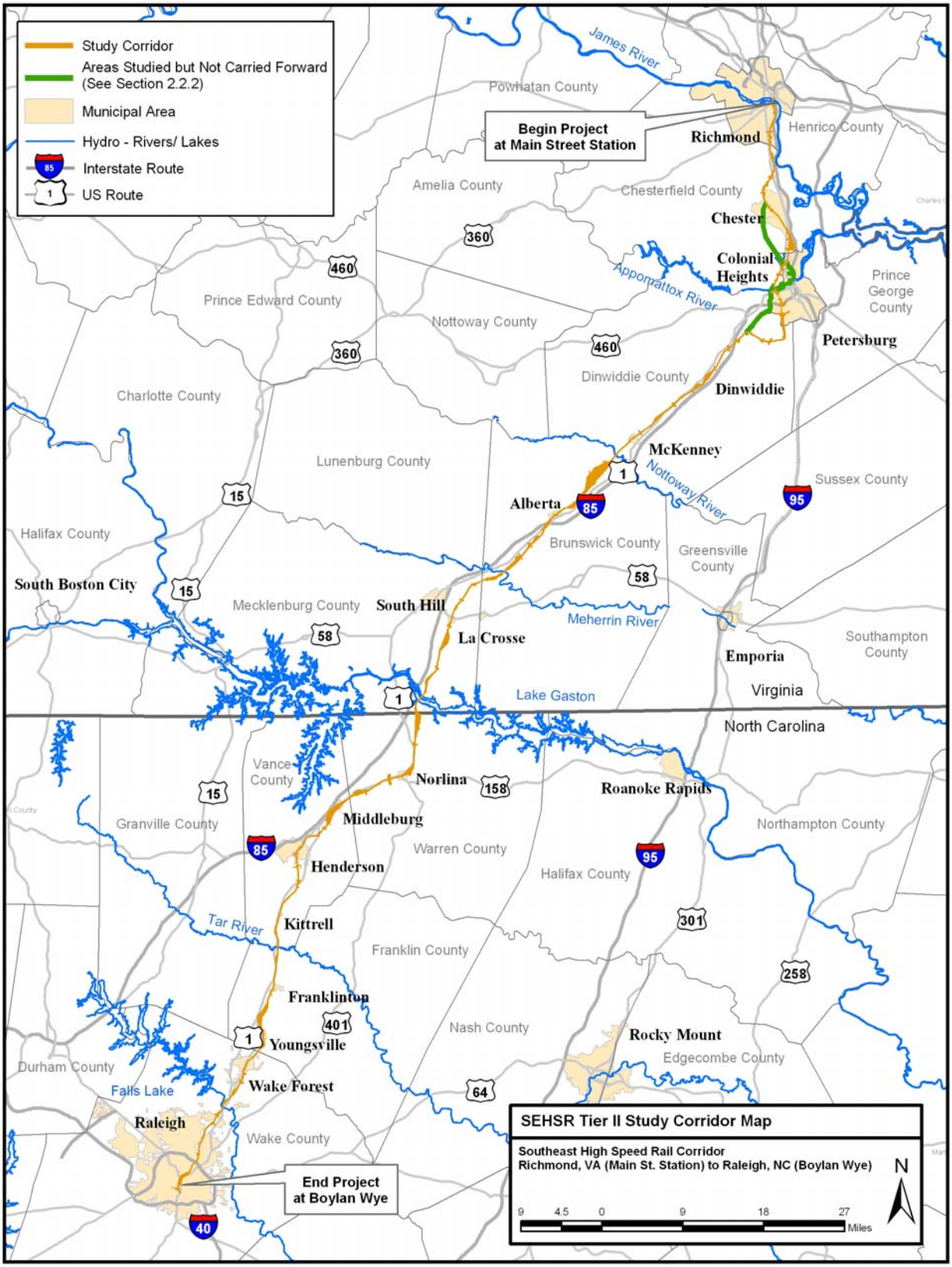
Washington, DC, to Richmond, VA:

- New bridge over Quantico Creek Bridge to allow for second track (Cherry Hill Third Track Categorical Exclusion (CE))
- Installation of third track within existing rail ROW (CE)
- Installation of crossover track to improve passenger rail service (CE)
- Supplemental environmental document to dismiss the alignment from Main Street Station to Doswell on the former C&O line (Alternative Considered but Dismissed)
- Proposed Richmond Area improvements to include station and platform improvements, interlockings, track and yard upgrades (Environmental Assessment (EA))
- Proposed Main Street Station Train Shed Rehabilitation (CE)

Raleigh, NC, to Charlotte, NC:

- Charlotte Rail Improvement & Safety Project (CRISP) (EA)
- Charlotte Mainline Grade Separation ( CE)
- Charlotte Sugar Creek Grade Separation (EA)
- Carmon Road Grade Separation (EA)
- Haw River Siding (EA)
- Hopson Track Improvement and Grade Separation (EA)
- Ethyl Jukebox Crossing Consolidation in China Grove (CE)
- Bowers to Lake, Haydock to Junker, and Reid/North Kannapolis Double Track Projects (CEs)

**Figure 1-1**


Study Corridor
Areas Studied but Not Carried Forward (See Section 2.2.2)
Municipal Area
Hydro - Rivers/ Lakes
Interstate Route
US Route
Begin Project at Main Street Station
End Project at Boylan Wye
James River
Powhatan County
Richmond
Henrico County
Amelia County
Chesterfield County
Chester
Colonial Heights
Appomattox River
Prince George County
Prince Edward County
Nottoway County
Petersburg
Dinwiddie County
Dinwiddie
Charlotte County
McKenney
Lunenburg County
Nottoway River
Sussex County
Alberta
Halifax County
Brunswick County
Greensville County
South Boston City
Mecklenburg County
South Hill
Meherrin River
La Crosse
Emporia
Southampton County
Lake Gaston
Virginia
North Carolina
Vance County
Norlina
Roanoke Rapids
Granville County
Middleburg
Northampton County
Warren County
Henderson
Halifax County
Tar River
Kittrell
Franklin County
Franklinton
Youngsville
Nash County
Rocky Mount
Edgecombe County
Durham County
Falls Lake
Wake Forest
Raleigh
Wake County
SEHSR Tier II Study Corridor Map
Southeast High Speed Rail Corridor
Richmond, VA (Main St. Station) to Raleigh, NC (Boylan Wye)
N
9 4.5 0 9 18 27
Miles

There is no current rail connection between Petersburg, VA, and Raleigh, NC, in the SEHSR preferred study corridor (approximately 132 miles along the old CSX S-line). From Petersburg, VA, to Norlina, NC (approximately 76 miles), there is a largely intact right of way, but rail service was discontinued in the mid 1980s and the tracks were removed. From Norlina, NC, to Raleigh, NC, there is only minor active freight service (approximately 1-4 trains per day).

This 132-mile portion of the corridor, Petersburg to Raleigh, is being designed as a single project, with a completely new, fully grade separated Class 6 railroad (110 mph) to allow high speed passenger and intermodal freight movement, as well as providing opportunities for conventional passenger service (i.e., same speeds and equipment, but more stopping locations), commuter passenger service, and standard freight service. The nature of this action merits a single environmental impact statement under the umbrella of the overall Tier I EIS performed for the whole Washington to Charlotte corridor.

The rail line is being engineered for a Maximum Authorized Speed (MAS) of 110 mph where achievable and with concurrence of the adjacent freight railroad as appropriate. MAS is similar to a speed limit on a highway; it represents the highest speed trains are allowed to operate and is based on factors such as curvature, grade, equipment, and host railroad operating policies. The actual designs will allow for higher speeds in the future with changes in technology and design assumptions. There will be areas where high speeds will not be possible, such as in congested areas and near station stops. Built up areas will receive security fencing and landscaping as appropriate to maximize public safety and minimize the rail line's intrusion to the community. The average speed is anticipated to be 85-87 mph depending on the stop configuration, the location on the corridor, and the final preferred alignment. Current passenger service in the corridor has a top speed of 79 mph and an average speed of 46-48 mph.

The SEHSR system is being designed as a shared system for passenger and freight use. Freight service already exists in most sections, and could be reinstituted by the freight railroads in the currently discontinued section between Petersburg and Norlina. Between Richmond and Raleigh, the design of SEHSR will vary at different locations, allowing MAS from 79 mph to 110 mph. The designs allow for a fully grade separated railroad (no at-grade crossings).

The operating efficiency for both passenger and freight service will increase significantly as a result of SEHSR corridor improvements.

Based on the MAS of 110 mph, the system is being designed for trains to be powered by fossil fuel; however the current designs will not preclude conversion to electricity in the future, thus allowing higher speeds. Conversion to electricity and higher speeds would require additional environmental evaluation at the appropriate time.

## 1.3 Legislative History

The overall SEHSR program is part of a plan by USDOT, the states, and Amtrak to develop a nationwide high speed rail network, as illustrated in Figure 1-2.

**Figure 1-2**
**Vision for High-Speed Rail in America**


*Source: Federal Railroad Administration High-Speed Rail Corridor Route Map, 2009*

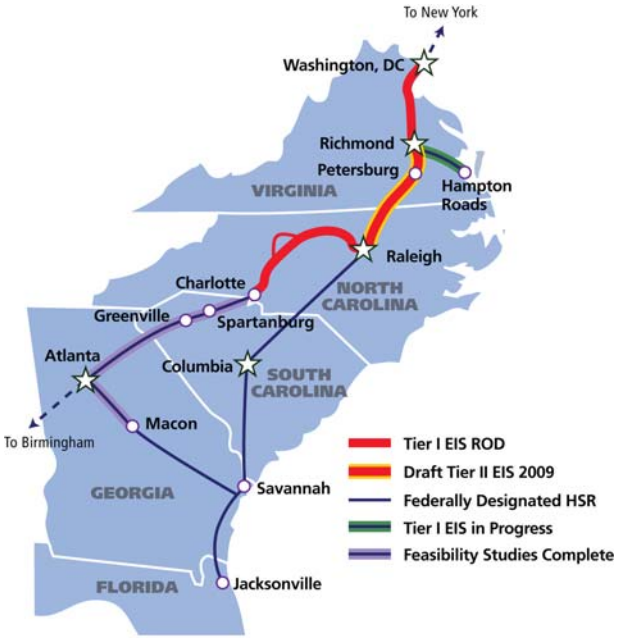
Authorization for a program of national high speed rail (HSR) corridors was included in the Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA, PL102-240, Section 1036) and continued in the Transportation Equity Act for the 21st Century (TEA-21, PL 105-178, Section 7201). ISTEA stated:

"It is the policy of the United States to develop a National Intermodal Transportation System that is economically efficient and environmentally sound, provides the foundation for the Nation to compete in the global economy and will move people and goods in an energy efficient manner."

The HSR corridor program was established by ISTEA as one component of this intermodal system.

In 1992, the USDOT designated the SEHSR Corridor one of five original national HSR corridors. This designation allowed federal monies to be spent on improvements to the existing rail system in order to achieve higher speed rail service. The original designated corridor extended from Washington, DC, to Charlotte, NC, via Richmond, VA, and Raleigh, NC. The USDOT designated an extension of the SEHSR from Richmond to Hampton Roads in 1995. In 1998, the USDOT extended the corridor into South Carolina, Georgia, and Florida. Further extensions in 2000 provided additional corridor connections in Georgia and Florida. The fully extended SEHSR Corridor is illustrated in Figure 1-3.

**Figure 1-3**
**Southeast High Speed Rail Corridor**




The SEHSR Corridor would connect with the Northeast Corridor (NEC) in Washington, DC, allowing HSR travel northward to New York, Boston, and beyond. The union of these two high speed corridors would create the greatest trip lengths within the Amtrak system, and thus the greatest potential revenues.

Since the initial corridor designation, FRA and FHWA have worked with both Virginia and North Carolina to facilitate development of rail transportation options. FRA has performed numerous studies in cooperation with the rail programs of both states.

In 1994, the states of Virginia, North Carolina, South Carolina, Georgia, and Florida entered into a joint Memorandum of Understanding (MOU) for a market study of the SEHSR region through sampling and comparison of the current person trips by commercial airline, intercity bus, Amtrak, and private automobile between selected city pairs. These results have served as the basis for developing the Ridership/Revenue Model used to evaluate different routings through the region.

In early 1998, FRA, FHWA, NCDOT, and DRPT entered into an MOU to coordinate and document each agency's respective roles and responsibilities in developing environmental documentation for the rail programs of both states. This cooperation has greatly benefited both Virginia and North Carolina.

In October 1999, NCDOT, in conjunction with DRPT, FRA, and FHWA, began preparation of the Tier I EIS for the portion of SEHSR between Washington, DC, and Charlotte, NC. A Record of Decision was received on this document in October 2002, confirming the overall purpose and need for the project, mode choice, and the preferred study corridor.

In February 2003, NCDOT, in conjunction with DRPT and FRA, began preparation of the Tier II EIS for the portion of SEHSR between Petersburg, VA and Raleigh, NC.

During 2004 legislative sessions in Virginia and North Carolina, the Virginia-North Carolina Interstate High-Speed Rail Compact was authorized. The Compact was formed pursuant to 49 USC 24101 to assist in developing a plan for the design, construction, financing, and operation of the SEHSR.

In 2006, the Tier II EIS was extended on to Richmond (approximately 30 miles), and in 2007, the evaluation of a multi-purpose trail concept on separate ROW was added.

### 1.3.1 Initiatives by the Commonwealth of Virginia

Since completion of the Tier I SEHSR EIS, Virginia has been conducting planning and environmental studies for HSR while working to enhance conventional freight and passenger rail operations. Ongoing studies include an investigation of improved passenger rail service between Richmond, VA, and Hampton Roads, VA, to ultimately connect to the Southeast, Northeast and Mid-Atlantic regions as an extension of the SEHSR Corridor. The Richmond/Hampton Roads Passenger Rail Project will identify a program of rail improvements or new rail that would be necessary to accommodate frequent passenger trains through the Richmond/Hampton Roads study area. A draft Tier I EIS examining the potential routes and possible environmental impacts was completed in 2009. Public Hearings are expected in early 2010. The final report is anticipated in late 2010 pending public comment.

A separate study is investigating higher speed rail connections between Main Street Station in Richmond, VA, to Washington, DC. The DRPT has recommended a 10-year $1,713.8 million rail improvement program along this corridor that includes a proposal for a parallel, third main line track over most of the corridor and identifies other track and signal improvements to increase railroad capacity and maximum speeds for both freight and passenger rail operations.

The Richmond Area Rail Improvement Project is working to reduce congestion for both passenger and freight rail operations through Richmond, VA. The project includes an assessment of the alternatives to choose the route between Doswell and Main Street Station. The assessment compared the Eastern route along the Buckingham Branch line and the Western route along the CSX line for environmental, operational, and cost impacts. This Decision Brief eliminated the Eastern route as an alternative considered but dismissed due to associated impacts. The Acca route was determined as the most appropriate route and acknowledged by FRA on May 19, 2009. Additional project elements include analysis of rail infrastructure improvements between Richmond, VA, and Newport News, VA, along the I-64 corridor; analysis of rail infrastructure improvements between Doswell, VA, and Washington, DC, along the I-95 corridor; analysis of rail infrastructure improvements south of Richmond between Main St. Station and Centralia, VA; and analysis of transit-oriented development opportunities between Main St. Station and Doswell, VA, at existing or new proposed Amtrak stations.

The Richmond Area Rail Improvement Project will also evaluate changes in routing between Main Street Station and South Petersburg in order to improve the time required to move passenger trains through Acca Yard. Acca Yard is a major freight yard for CSX, but its location, design, and limited capacity have a major impact on the ability to move passenger and freight trains through Richmond. DRPT and CSX both agree that improvements must be built to allow passenger trains to be routed around the major yard choke points. An additional engineering study of Main Street Station was conducted to determine the

feasibility of low-level platforms; it was determined that the station would not be able to house the low level platforms.

### 1.3.2 Initiatives by the State of North Carolina

Since completion of the Tier I SEHSR EIS, North Carolina has also worked to advance HSR within its jurisdiction. Ongoing rail efforts have focused primarily on enhancing passenger rail service by making infrastructure improvements to enhance reliability, reduce travel times, improve safety, and improve station facilities.

A primary focus has been on reducing travel time between Raleigh and Charlotte (174 miles). Based on recommendations from the Transit 2001 Commission, a goal was set of reducing rail travel time to two hours between these cities. Passenger train service took approximately three hours and forty-five minutes at that time. Based on congestion mitigation studies and joint corridor assessments, NCDOT, Norfolk Southern Railroad (NS), and the NC Railroad (NCRR) developed a $400 million, multi-year program of infrastructure improvements to help alleviate freight and passenger delays in this heavily used corridor. From 2003 through 2005, NCDOT, NCRR, CSX, and NS implemented the first series of improvements. These improvements, which totaled approximately $50 million, included extending sidings, changing the slope of tracks, straightening curves, and installing centralized train control signals. These initial improvements have reduced travel time by 30 minutes in the corridor.

NCDOT has also been working to improve safety along the NCRR corridor between Charlotte and Raleigh. Using traffic separation studies, NCDOT has evaluated rail crossings and closed more than 50 crossings. Other improvements have also been made in the corridor, with over $30 million invested to date.

As part of the NCDOT Rail Program, the department was involved in restoration work on historic passenger stations in the corridor at Salisbury, High Point, and Greensboro. New stations have been constructed in Kannapolis and Durham. In addition, major multimodal transportation centers are currently planned for Charlotte and Raleigh. The station work represents a current investment of over $78 million in the SEHSR corridor alone.

NCDOT has also been involved in several efforts to expand HSR service and advocate for federal funding of HSR. NCDOT has worked with the states of South Carolina and Georgia, and the FRA to complete two engineering feasibility studies for extending HSR service from Charlotte, NC, through Greenville-Spartanburg, SC, and Atlanta, GA, to Macon, GA. NCDOT also worked with the 16 Chambers of Commerce from the six states that compose the Southeastern Economic Alliance to seek congressional support for the establishment of a federal funding program for rail.

## 1.4 Purpose of the Proposed Project

The Richmond, VA, to Raleigh, NC, portion of SEHSR is an integral part of the overall Washington, DC, to Charlotte, NC, corridor. It constitutes 162 miles of the approximately 450-mile corridor that was evaluated in the 2002 Tier I EIS. The purpose for the segment from Richmond to Raleigh is tied to implementation of the larger corridor. Therefore, the purpose of this proposed action is to facilitate the previously approved purpose for the SEHSR Tier I EIS, which includes the following and is applicable to the section from Raleigh to Richmond:

- Divert trips from air and highway within the travel corridor, thus reducing the growth rate of congestion (the I-95 portion of the corridor is included in this specific project section and it carries a significant portion of the automobile traffic)

- Provide a more balanced use of the corridor's transportation infrastructure

- Increase the safety and effectiveness of the transportation system within the travel corridor

- Serve both long-distance business and leisure travelers between and beyond Virginia and North Carolina, including Amtrak's Northeast Corridor, which extends from Washington, DC, to Boston, MA (with extensions planned beyond Boston), as well as points south (this specific project section serves as the key link for these travelers to the busy Northeast).

More information about the purpose of the SEHSR corridor can be found in the 2002 Tier I EIS and on the program's website at www.sehsr.org.

## 1.5 Need for the Proposed Project

The Tier I EIS for the SEHSR between Washington, DC, and Charlotte, NC, established the overall need for the project:

- Growth – Population and economic growth rates in VA and NC have been higher than national averages over the past several decades and are projected to remain high over the next few decades. If transportation systems do not provide options for reliable and convenient movement of goods and people, the region's economy will suffer.

- Congestion – Population growth and economic development have led to increasing vehicle use on interstates and major highways in the region, as well as increasing demand for air travel. The majority of intercity automobile travel in the Washington, DC, to Charlotte, NC, corridor utilizes I-85 and I-95, where daily traffic volumes regularly exceed design capacities. Airport congestion in the corridor has resulted in growing delays. This specific project section encompasses portions of both I-95 and I-85, as well as the airports of Richmond, VA and Raleigh, NC.

- Travel Time – Currently, within the SEHSR corridor, conventional passenger rail travel times are not competitive with travel by airplane or auto. If meaningful reductions in travel time and improvements to equipment are achieved, modeling indicates that the competitiveness of rail passenger service will increase, and travelers will divert from other modes of transportation.

- Connectivity – Implementation of HSR service could enhance regional connectivity. VA and NC have both evaluated the feasibility of adding conventional passenger train service to eastern and western portions of the states. The proposed SEHSR service would serve as the spine to these added routes, allowing conventional rail service passengers to connect to the proposed SEHSR service and other points in the Northeast, Southeast, and beyond. The Richmond, VA to Raleigh, NC portion of the SEHSR corridor enhances the connectivity through greatly enhanced speed, reliability, and reductions in travel time.

- Air Quality – A number of counties within the SEHSR corridor are presently experiencing air quality impacts from mobile source emissions. The movement of passengers by HSR offers significantly less pollution per passenger mile traveled than other mobile sources.

Diverting some of the traveling public from automobiles to trains will aid in reducing emissions throughout the corridor.

- Safety – For SEHSR service to divert travelers from other transportation modes, potential riders must have confidence that the service is not only fast and reliable, but as safe as or safer than other modes. Rail has a safety record similar to air travel, and rail has proven exponentially safer than automobile travel. Figures from the National Safety Council show that Amtrak experienced .04 fatalities per 100 million passenger miles, while automobile fatalities equaled 1.29 fatalities per 100 million passenger miles. VA DRPT and NCDOT have been working in their respective states to improve safety along active rail lines within the SEHSR corridor since the 1990's.

- Energy Efficiency – Additional rail improvements could also result in less energy use and a corresponding decrease in pollution within the SESHR corridor. Intercity rail is 45 percent more energy-efficient than domestic commercial airline service and 76 percent more energy-efficient than general aviation. These numbers reflect Amtrak equipment in use in 1994 - both fossil fuel and electric - and represent BTUs/passenger mile as compared with air travel. As well, passengers traveling by rail use 21% less BTUs per mile on average than those traveling by automobile.

The proposed improvements between Richmond, VA, and Raleigh, NC, address all of the above needs because they would result in a shorter trip with improved connectivity and safer operation for the entire Washington, DC, to Charlotte, NC, corridor. More information about the need of the SEHSR corridor can be found in the 2002 Tier I EIS and on the program's website at www.sehsr.org.