CHAPTER 2 ALTERNATIVES CONSIDERED

2.0 Introduction

This chapter describes the range of alternatives considered in the Tier I Draft Environmental Impact Statement (EIS). This chapter summarizes the development and subsequent screening of a wide range of conceptual alternatives developed to accommodate frequent and higher speed passenger rail service in the Richmond to Hampton Roads study area, with connections to the larger national network of passenger rail transportation on the East Coast. Detailed discussions on the identification and screening of route and station alternatives can be found in the *Alternatives Development Report, November 2005*.

2.1 Definitions of Terms

Several terms referring to conventional, higher speed and high-speed rail are used in this Tier I Draft EIS document. The definitions of each term are provided below.

Conventional speed trains have maximum operating speeds of 79 mph.

The Federal Railroad Administration (FRA) has sponsored the development of high-speed ground transportation (HSGT). HSGT is a family of rail transportation options that is time-competitive with air and/or automobile travel on a door-to-door basis for trips in the approximate range of 100 to 500 miles. This is a market-based, not a speed-based definition: it recognizes that the opportunities and requirements for HSGT differ markedly among different pairs of cities that address long-term passenger transport needs in heavily populated corridors. The term “corridor” means a natural grouping of metropolitan areas and travel markets that, by their proximity and configuration, lend themselves to efficient service by ground transport.

High-speed rail in common usage refers to train operating speeds that exceed 150 mph, such as the Amtrak *Acela*, which operates in the Northeast Corridor (NEC) and reaches 150 mph at two locations between New York City and Boston, or the *TGV* in France and *Shinkansen* in Japan. Higher speed rail refers to trains that operate at speeds in excess of the conventional 79-mph speed limit for Amtrak on most routes outside the NEC, including speeds up to 110 mph. Consequently, speed options for this Tier I Draft EIS include 79 mph for the Status Quo and No Action Alternatives and 90 mph and 110 mph for aspects of the higher speed Build Alternatives. As discussed below, no high-speed rail alternative (speeds exceeding 110 mph) was carried forward for detailed analysis in this Tier I Draft EIS.

2.2 Alternatives Development and Evaluation Process

The development and evaluation of alternatives in this Tier I Draft EIS utilized a two-level screening approach to identify and evaluate corridor level alternatives. The Virginia Department of Rail and Public Transportation (DRPT) created a Technical Working Group (TWG) for the project that assisted FRA, and DRPT and provided input in each stage of the alternatives evaluation screening. The TWG consisted of elected and appointed public officials in the affected communities and other concerned stakeholders. Initially, DRPT and FRA combined ideas and concepts from project scoping that could potentially satisfy the project purpose and need. These corridor route and service options, in addition to data from prior studies and comment from the TWG, were combined into a list of Initial Alternatives.

The screening process to identify viable alternatives was completed in two stages of alternatives evaluation, refinement and elimination. The initial stage of screening, Screen I as described in 2.3.1, evaluated a wide range of program improvements that would be necessary for the implementation of higher speed passenger rail service. These improvements were assessed for their suitability with respect to the known physical and policy constraints of the Richmond to Hampton Roads study area. The purpose of this step was to eliminate any alternatives that did not meet the project purpose and need or that had fatal flaws with regard to cost or environmental impact. The result of this screening was the identification of the three Build Alternatives in addition to the Status Quo and No Action Alternatives studied in this Tier I Draft EIS.

The second stage of screening, Screen II as described in 2.3.2, was accomplished through this Tier 1 Draft EIS process and included the evaluation of the five alternatives based on the project purpose and need, established project goals and objectives, cost, and environmental and related impacts. These alternatives included routes and route combinations along with speed options. This evaluation of alternatives is presented in this Tier I Draft EIS. The Preferred Alternative that emerges from the Tier I EIS could then advance to the Tier II EIS phase of project development and further analysis.

2.3.1 Screen I

Screen I consisted of an engineering and policy screen that considered the following:

- Consistency of possible alternatives with the project purpose and need and within the framework of the Southeast High-Speed Rail Project;
- Major engineering constraints, such as excessive curvature of the alignment, the location of stations, and the right-of-way requirements (More detailed information regarding engineering feasibility is documented in the *Engineering Feasibility Report*, revised April 2008);
- Cost; and
- Environmental impacts.

During Screen I the following alternative characteristics were considered: technology, alignment, station location, propulsion, vehicle storage and maintenance. Numerous options for each of these characteristics were identified. Alternatives and alternative characteristics that did not meet the engineering and policy considerations discussed above did not advance to Screen II. An overview of alternatives and characteristics considered in Screen I, including those alternatives eliminated from further evaluation during this process, is provided in Section 2.4.

2.3.2 Screen II

Screen II builds upon the outcomes of Screen I to further define and develop alternatives to be advanced into the Tier 1 Draft EIS. This included defining the physical and operational characteristics for each alternative. As part of Screen II, Measures of Effectiveness (MOE) were developed based on the project's goals and objectives, which were applied to the remaining alternatives to establish discernable differences among the alternatives relative to their ability to satisfy project criteria. The MOE evaluation criteria are summarized below.

- **Service and Reliability** – Evaluates end-to-end travel times, frequency and reliability, ridership, and freight rail interactions;
- **Access** – Evaluates the ability of the alternatives to serve study area population and employment areas, and provide local and regional access via transit and networks;
- **Safety** – Evaluates the alternatives' ability to provide a safe environment for all modes of travel and emergency services;
- **Cost-Effectiveness** – Indicates the levels of capital and annual operating investment needed to construct, operate and maintain the system and infrastructure for the proposed alternative, followed by a comparison of the cost against the benefits received.

The following MOE evaluation criteria were not included in the Screen II process since they are explored in the Tier I Draft EIS:

- **Environmental Impacts** – Evaluates potential impacts on the community and environment to include transportation, air quality, noise and vibration, energy, land use, socioeconomic factors, community impacts, environmental justice, parklands, farmlands, aesthetics, utilities, contaminated sites, cultural resources, geologic resources, hydrologic and water resources, wetlands, and biological resources (habitats and species);

- **Community Goals** – Evaluates the extent to which proposed improvements are consistent with state and regional economic plans.

Based on the Screen II findings and TWG comments, the FRA and DRPT identified five alternatives for full evaluation in the Tier I Draft EIS. For a detailed discussion of the screening process, refer to the *Alternatives Development Report, November 2005*.

2.4 Initial Alternatives

The list of Initial Alternatives for the Build Alternatives included two elements: 1) passenger rail technologies and 2) physical route alignments. The following Initial Alternatives were identified and presented to the TWG, the FRA and the public for consideration and evaluation.

2.4.1 Passenger Rail Technology and Propulsion Alternatives

Passenger rail technology examined for the Richmond/Hampton Roads Passenger Rail Project included an examination of both high-speed and higher speed rail technologies and electric and diesel-electric propulsion systems.

Train Speed Options - Currently, there is only one electrified high-speed rail line in the United States. The Northeast Corridor (NEC) between Boston, MA and Washington, DC is almost completely grade-separated and operates at speeds in excess of 110 mph, requiring cab signal systems to be installed in all locomotives operating on NEC track in accordance with FRA regulations. Grade separation and cab signaling are both very costly. DRPT and the North Carolina Department of Transportation examined the cost differences of high-speed and higher speed rail technologies in the context of the SEHSR project and concluded that the higher speed approach, with speeds up to 110 mph, is more cost effective.

SEHSR is one of the five original federally designated high-speed rail corridors. The corridor stretches from Washington DC, through Richmond to Raleigh and Charlotte, North Carolina. Higher speed rail in the southeast will mean top speeds of 110 mph and average speeds between 85-87 mph. Virginia, North Carolina, South Carolina and Georgia have joined together to form a four-state coalition to plan, develop and implement the system, which will be developed incrementally, upgrading existing rail rights-of-way.

A basic assumption of the incremental approach to high-speed rail is that transportation service would be provided on standard gauge railroad tracks capable of also supporting North American standard heavy-haul freight trains as well as the higher speed passenger trains. Based on the findings of earlier feasibility studies, the proposed maximum operating speed of the higher speed passenger service would be 110 mph.[17] The earlier studies showed that with fossil fuel engines, speed increases above 110 mph did not generate significant improvements in ridership, travel time savings or revenues, but they did significantly increase costs due to the more stringent regulatory requirements to operate service above 110 mph. While some segments of the SEHSR service may be operated on tracks dedicated to higher speed rail, much of the route will involve incremental improvements to tracks owned by commercial freight railroads operating at conventional speeds. Shared tracks place certain technological requirements and limitations on higher speed trains.

An example of higher speed rail technologies in use today is the Keystone Corridor in Pennsylvania. The Keystone Corridor is a 349-mile federally designated high-speed rail corridor between Pittsburgh and Philadelphia. The 104-mile electrified segment of the Keystone Corridor between Harrisburg and Philadelphia was upgraded to 110-mph operation from Lancaster to Parkesburg, with the section between Paoli and Philadelphia upgraded to 90-mph operation. Express trains from Harrisburg, which stop only at Elizabethtown, Lancaster, Paoli and Philadelphia's 30th Street Station, take 90 minutes to make the trip, one-half hour less than the old service. Local trains that include stops in Middletown and Mount Joy take 105 minutes. Ten of the 14 Keystone trains from Harrisburg continue on to New York, and express train riders can complete that trip in 3 hours, 15 minutes.

[17] *Feasibility Study Summary & Implementation Plan*, NCDOT- Rail Division, April, 1999.

DRPT and FRA determined that the incremental higher speed technology with passenger train speeds up to 110 mph is appropriate for the Richmond/Hampton Roads Passenger Rail Project and compatible with the SEHSR project. Consequently, the higher speed option for the Richmond-Hampton Roads Passenger Rail Project was adopted.

Train Technology Options - For the most part, the type of fuel used to power the train is the predominant consideration when selecting a technology. Modern railways obtain energy to operate trains through fossil fuel (diesel-electric) and electric power. Each technology has its good qualities and limitations. The use of fossil fuel engines fits well with the incremental speed approach, allowing improved equipment to be used early in the implementation of the system under existing conditions.

DRPT and NCDOT examined train technology options for the SEHSR. They concluded that electric propulsion is not cost effective for the distances involved and that diesel-electric, fossil fuel locomotives are the most feasible power option for SEHSR.

In Virginia, the Virginia Railway Express (VRE) commuter rail system examined the feasibility of extending NEC electrification south from Washington to Fredericksburg when locomotives were being purchased a few years ago. VRE found that electric propulsion would allow their trains to complete the trip in 75 minutes while diesel-electric service would take 90 minutes, saving 15 minutes from each trip time. The capital expense of electrifying the line, when compared to buying conventional diesel-electric locomotives, did not justify the 15 minute travel time savings and, therefore, VRE purchased diesel-electric locomotives.

The Richmond/Hampton Roads Passenger Rail Project would connect directly with the SEHSR project in either Richmond or Petersburg. Marketing considerations strongly suggest that technology and operation plans provide seamless linkage between these projects and that each service should have standardized and compatible train equipment.

Given the costs of an electrified system (both monetary and environmental) relative to the ridership, revenue and time savings to be achieved for the Richmond/Hampton Roads Passenger Rail Project over the next 20 years, in addition to the need for compatibility between this project and SEHSR service, diesel-electric power is the most feasible option for this project.

Safety and Regulatory Issues - The FRA has stringent regulations regarding passenger train safety issues. Most high-speed trains operating in other parts of the world do not meet current FRA safety regulations. Most passenger railcars manufactured for use by Amtrak meet the safety requirements for 110-mph operations.[18] Before a final selection of train equipment is made for this project, compliance with FRA safety regulations would need to be achieved.

At-grade highway crossings are permitted for Maximum Authorized Speed (MAS) between 80 mph and 110 mph without special requirements. However, it is recommended that highway grade crossings be eliminated through closure or grade separation, where possible, to improve safety. In areas where closure or grade separation is not practical, a ”Sealed Corridor” program could serve as a model for highway crossing safety improvements. This program upgrades heavily used highway-rail crossings with improvements such as four-quadrant gates and median barriers.

The introduction of higher speeds onto existing rail lines would require modifications to the existing signal system. The spacing of signals would be increased to accommodate the longest braking distance of any train operating on the route. The fastest train would generally require the longest braking distance, and for this project the fastest operating speed under consideration is 110 mph. Also, when any operations exceed 79 mph, signal indications are required to be displayed in the locomotive cab for any train, freight or passenger, operating in the corridor.[19] In addition to the need to adjust the signal spacing based on the maximum speed

[18] Amtrak’s *Talgo* trains in the Pacific Northwest operate under a regulatory waiver and are not yet considered fully compliant with the regulations.
[19] Automatic train stop or automatic train control may be used in lieu of cab signals.

of passenger trains operating as part of this service, all locomotives, including lower-speed freight locomotives, would require in-cab signal display capability.

2.4.2 Initial Alternatives Considered

The Richmond to Hampton Roads study area is divided by the James River, with the Southside region to the South and the Peninsula region to the North. Two principal railroad facilities serve the study area, the Norfolk Southern (NS) on the Southside and the CSXT on the Peninsula. Ultimately, two routes were identified for this project: the Southside/NS and the Peninsula/CSXT routes. In addition to these routes other routes were previously considered, including a new route to be located within the improved Route 460 highway corridor on the Southside and a James River Route, which essentially joined the Peninsula/CSXT route to the Southside/NS route with a bridge from the City of Newport News to Isle of Wight County. Figure 2-1 shows the routes evaluated. Descriptions of these routes follow:

Southside/Norfolk Southern (Southside/NS) Route - This route was documented in the *Richmond to South Hampton Roads High-Speed Rail Feasibility Study* (DRPT 2002). The Southside/NS route would extend south from Richmond to Petersburg utilizing the SEHSR project route segment before moving to the Norfolk Southern Main Line at Petersburg to Norfolk. The NS route parallels US Highway 460 for a significant portion of its length. Trains would run on upgraded facilities in the existing NS right-of-way from Petersburg to Suffolk then along a restored Virginian Railway line to downtown Norfolk. Based on environmental and engineering data from the SEHSR Tier II EIS, the connection from the Southside/Norfolk Southern route will occur at the northeast quadrant of the CSXT/NS off-grade railroad crossing just north of Collier Yard in south Petersburg. This option allows direct linkage to the SEHSR CSXT main line from the Norfolk Southern line from Norfolk, reduces the number of passenger rail lines going through Petersburg, and maximizes the dual benefit opportunity of utilizing the SEHSR Tier II EIS alignment analysis through Petersburg. The North Collier connection allows the Norfolk trains to use the SEHSR Petersburg routing alternative and station location, limits potential freight and passenger train conflicts within the yard itself, and limits potential conflicts and congestion that arise from Norfolk Southern freight trains stopping and working at Poe Yard, the only other potential access to the Norfolk line. The SEHSR project will select the routing though Petersburg along with station location options.

Peninsula/CSXT Route - This route generally follows the existing CSX Transportation (CSXT) rail line from Richmond to Newport News. The line is located on the north side of the James River, between the river and Interstate 64. The existing Amtrak service between Washington, Richmond, and Newport News uses this route. Improvements to this route were studied in the *Interstate-64 Corridor Major Investment Study* (VDOT 1999).

Southside/Route 460 - The Virginia Department of Transportation (VDOT) Route 460 Location Study examined potential highway improvements and new alignments to address roadway design deficiencies that result in numerous problems related to safety, accommodation of truck traffic, hurricane evacuation and military preparedness. Several potential highway Build Alternatives were examined that satisfied the purpose and need of the Route 460 Location Study. The scoping phase of the Richmond/Hampton Roads Passenger Rail Project evaluated potential railroad alignments within the right-of-way boundaries of the improved highway facility. In each instance, VDOT and DRPT determined that the highway alignment was geometrically incompatible with a railroad alignment.

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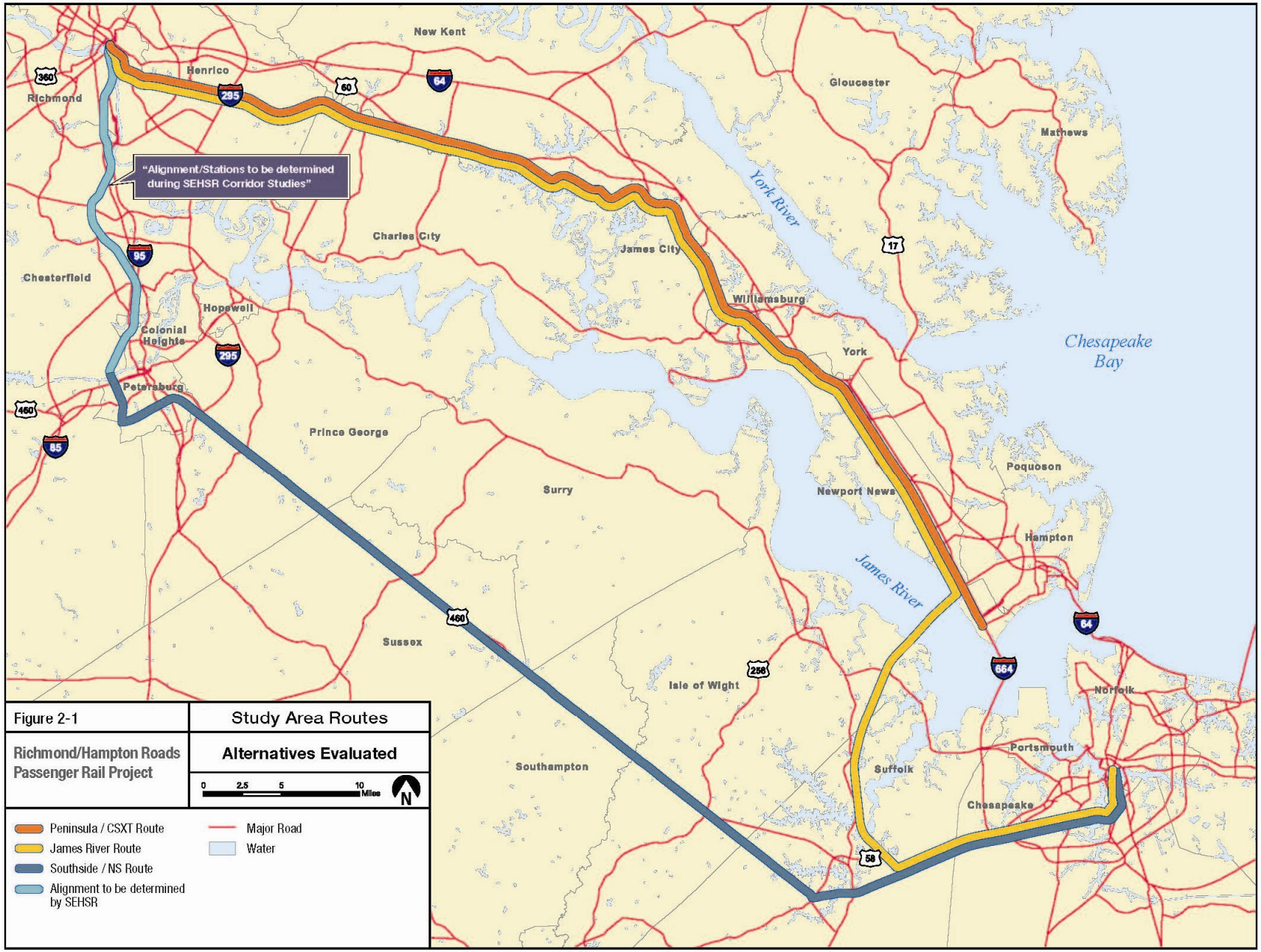
New Kent
Henrico
Richmond
Gloucester
Mathews
"Alignment/Stations to be determined during SEHSR Corridor Studies"
York River
Charles City
James City
Chesterfield
Hopewell
Colonial Heights
Williamsburg
York
Chesapeake Bay
Petersburg
Prince George
Surry
Poquoson
Newport News
Hampton
James River
Sussex
Isle of Wight
Norfolk
Portsmouth
Southampton
Suffolk
Chesapeake
Figure 2-1
Study Area Routes
Richmond/Hampton Roads Passenger Rail Project
Alternatives Evaluated
0 2.5 5 10 Miles
N
Peninsula / CSXT Route
James River Route
Southside / NS Route
Alignment to be determined by SEHSR
Major Road
Water

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James River Route - This route is an extension of the Peninsula/CSXT Route from Newport News to Norfolk to serve communities north and south of the James River. From Newport News the route would extend across the James River on a new railroad bridge that parallels the 4.5-mile long James River Bridge. The rail route would leave the CSXT right-of-way near the existing Newport News Amtrak station and would cross Route 60 (Warwick Boulevard) before reaching the James River. The new railroad bridge would be approximately 4.4 miles in length with a movable span over the shipping channel. On the south side of the James River, a new route would be established roughly parallel to Routes 10 and 32 for 13.7 miles from the bridge as far as Suffolk, to a point approximately 1.2 miles north of the intersection of Bypass 58/460 and Godwin Boulevard (Routes 10/32). This new route would be designed to minimize the number of bridges required to span major bodies of water and avoid other environmental impacts. The route would then merge with the CSXT/Norfolk Southern right-of-way that connects Suffolk with Portsmouth and Norfolk. It would further proceed to downtown Norfolk.

2.4.3 Alternatives Not Advanced

The Southside/Route 460 alternative was eliminated from further consideration due to the geometrically incompatible design elements required for the highway and rail projects, in addition to the potential environmental impacts. The structure of the highway curves required would restrict higher speed passenger train operation, and the addition of rail service adjacent to the highway facility could potentially result in substantial adverse environmental consequences, particularly for wetlands. Based on these challenges, this alternative was not advanced for further study.

The James River alternative was eliminated from further consideration due to the high cost of the new infrastructure required to cross the navigable James River and the potentially severe environmental impacts associated with the construction of a new railroad alignment. The new 4.4-mile railroad bridge and 13-mile overland route alignment would impact navigable waterways, sensitive wetlands, native wildlife habitats and other biological resources. More prudent and feasible alternatives exist that do not have these substantial negative cost and environmental impacts.

2.5 Detailed Definition of Alternatives

At the completion of the Screen I stage of project definition and evaluation, two viable route alternatives remained. These alternatives were combined with operating plan elements in Screen II (as described earlier in this Chapter) that resulted in a detailed definition of alternatives as described below and summarized in Table 2-1.

Each Build Alternative has been defined to include several components: technology, propulsion, route, station locations and operating speeds. As determined in the Screen I level of evaluation, all of the Build Alternatives will include train equipment compatible with the SEHSR. Rail operations would provide a maximum 110-mph operating speed utilizing diesel-electric propulsion. The routes being evaluated in this Tier I Draft EIS would include options to utilize the railroad facilities on both sides of the James River, with Norfolk Southern on the Southside and CSXT on the Peninsula. Station locations and operating speeds were combined with these elements to define the alternatives.

As part of the alternatives development process, potential station sites were identified from earlier studies or from comments raised during the scoping process. A storage and maintenance facility would be required as part of all Build Alternatives; however, the exact location and operational parameters of the storage and maintenance facilities have not been developed. Specific features of station locations and storage and maintenance facilities will be evaluated in more detail during the Tier II EIS process.

Table 2-1: Summary of Alternatives Evaluated in Tier I Draft EIS (2025)

Alternative	Description	Stations	Operations	Preliminary Capital Cost Estimates (millions $2008)		Preliminary Annual Operating and Maintenance Costs (millions $2008)	
				90 mph	110 mph	90 mph	110 mph
Status Quo	Existing Conventional Rail on Peninsula/CSXT route	Peninsula/CSXT route: Existing Richmond, Williamsburg, and Newport News Amtrak Stations	2 daily round-trip trains on Peninsula/CSXT at 79 mph	NA	NA	No train	No train
No Action	Existing and Currently Planned Conventional Rail on Peninsula/CSXT route	Peninsula/CSXT route: Existing Richmond, Williamsburg, and Newport News Amtrak Stations	3 daily round-trip trains on Peninsula/CSXT at 79 mph	NA	NA	$21.3 (at 79 mph)	$21.3 (at 79 mph)
Alternative 1	New Higher Speed passenger service on Southside/NS route, in addition to existing and currently planned Conventional Rail on Peninsula/CSXT as described by the No Action	Southside/NS route: Existing Richmond*, Petersburg*, and new stations at Bowers Hill and downtown Norfolk. Peninsula/CSXT route: Existing Richmond, Williamsburg, and Newport News Amtrak Stations.	6 daily round-trip trains on Southside/NS at 90 to 110 mph 3 daily round trip trains on Peninsula/CSXT at 79 mph	$475.4	$543.0	$80.0	$81.4
Alternative 2a	New Higher Speed passenger Service on Peninsula/CSXT route New conventional speed passenger service on Southside/NS route	Peninsula/CSXT route: Existing Richmond and Williamsburg stations and a new downtown Newport News station. Southside/NS route: Existing Richmond*, Petersburg*, and new stations at Bowers Hill and downtown Norfolk.	6 daily round-trip trains on Peninsula/CSXT at 90 to 110 mph 3 daily round-trip trains on Southside/NS at 79 mph	$742.3	$844.2	$77.9	$79.4

Alternative	Description	Stations	Operations	Preliminary Capital Cost Estimates (millions $2008)		Preliminary Annual Operating and Maintenance Costs (millions $2008)	
				90 mph	110 mph	90 mph	110 mph
Alternative 2b	New Higher speed passenger service on Peninsula/ CSXT route	Peninsula/CSXT route: Existing Richmond* and Williamsburg stations and a new downtown Newport News station	9 daily round-trip trains at 90 to 110 mph	$330.0	$431.9	$71.7	$72.4

Source: DMJM Harris/Parsons Transportation Group, November 2005.
*The segment between Richmond and Petersburg along the Southside/NS Route has not been evaluated for environmental impacts as part of this Tier I Draft EIS. This segment, including potential Petersburg station improvements, is being evaluated in the SEHSR Tier II Draft EIS. Additional improvements required at Main Street Station for high-speed rail service have not been evaluated for this Tier I Draft EIS, and will be included in a separate corridor plan for Washington, DC to Richmond.

Speed options were combined with the physical features of the routes to define each of the Build Alternatives. Conventional speed options on the Southside/NS route were included to examine the ridership and environmental impacts of providing similar levels of passenger rail service on both sides of the James River. All alternatives were limited to a combination of nine total trains in each direction due to capacity constraints between Richmond and Washington, DC.

The alternatives examined in this Tier I Draft EIS include the Status Quo, the No Action, Alternative 1, Alternative 2a and Alternative 2b as described below.

2.5.1 Status Quo Alternative

This is a true "do-nothing" alternative for comparison to the other alternatives being considered. It assumes that no operational or physical changes would be made to the existing Amtrak service operating on the Peninsula/CSXT route and that no service would be added on the Southside/NS route. Two daily round-trip trains would continue to operate at maximum speeds up to 79 mph between Richmond and Newport News using the existing stations: Richmond Main Street, Williamsburg and Newport News. Figure 2-2 shows the Status Quo Alternative.

2.5.2 No Action Alternative (Existing and Planned Peninsula Conventional Service)

The No Action Alternative consists of the existing transportation network and committed highway, rail, and airport improvement projects in the Richmond to Hampton Roads Corridor. This alternative provides an alternative for comparative evaluation of the advantages and disadvantages of the Build Alternatives in 2025. Figure 2-2 shows the route of the No Action Alternative. The No Action Alternative includes:

- Major highways and arterials that make up the roadway network (for auto and bus travel);
- Existing and currently planned conventional passenger rail service (three round-trips daily);
- Intercity bus service;
- Local public transit services;
- Freight railroad services and planned and committed improvements;
- Air travel; plus
- Projects of all modes that are included in the regional MPO constrained Long Range Transportation Improvement Plans.

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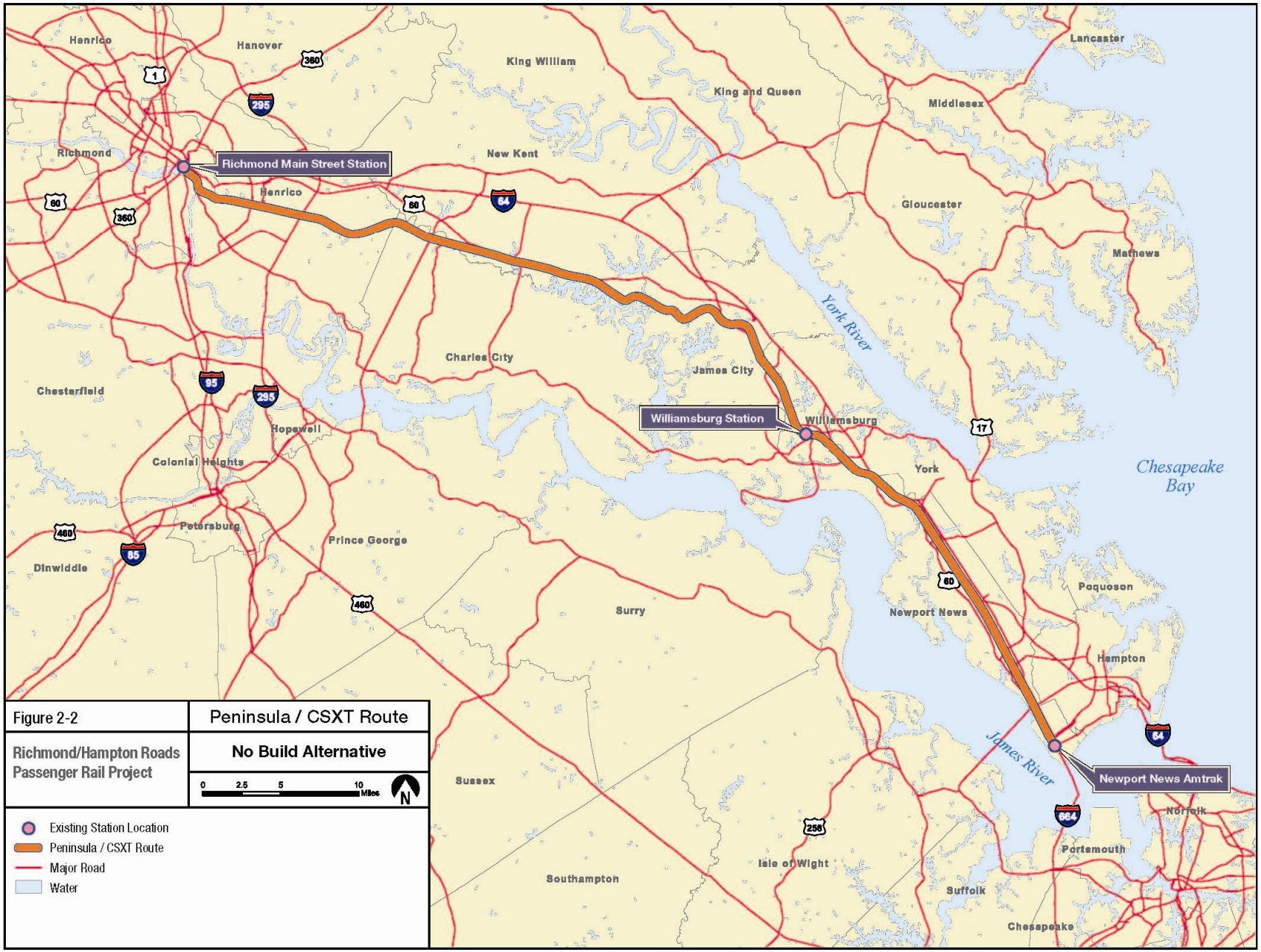
Richmond Main Street Station
Williamsburg Station
Newport News Amtrak
Henrico
Hanover
King William
King and Queen
Lancaster
Middlesex
Richmond
New Kent
Gloucester
Mathews
York River
Charles City
James City
Chesterfield
Williamsburg
Hopewell
Colonial Heights
York
Chesapeake Bay
Petersburg
Prince George
Dinwiddie
Surry
Poquoson
Newport News
Hampton
James River
Sussex
Norfolk
Portsmouth
Isle of Wight
Southampton
Suffolk
Chesapeake
Figure 2-2
Peninsula / CSXT Route
Richmond/Hampton Roads Passenger Rail Project
No Build Alternative
0 2.5 5 10 Miles
N
Existing Station Location
Peninsula / CSXT Route
Major Road
Water

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It is important to note that the No Action Alternative contains no new expenditures beyond those already programmed; consequently it is considered a zero cost option when compared to the Build Alternatives.

The No Action Alternative also makes no provision for any improvement of rail service beyond what is already being operated and currently planned. It assumes the operation of three daily round-trips of conventional speed Amtrak passenger service between Richmond and Newport News connecting to Washington, DC operating on the CSXT alignment on the Peninsula. This is an additional daily round-trip, which is in Amtrak's long range plan. The No Action Alternative also includes planned and committed railroad improvement projects in the CSXT right-of-way in support of planned freight rail improvements. The No Action Alternative, required by NEPA/CEQ regulations, provides a comparison baseline alternative from which to assess the impacts of the Build Alternatives being evaluated. (Figure 2-2)

Amtrak has provided plans that include this enhanced service, which is included in the regional transportation network. The Amtrak service currently operates at conventional speeds (maximum 50 mph for freight operations and 79 mph for passenger operations) on tracks shared with CSXT freight operations. CSXT and DRPT currently have planned improvements to the CSXT/Peninsula line that would improve freight and Amtrak operations between Main Street Station and Newport News. Some of these improvements are highlighted in Chapter 4. The portion of the service between Richmond and Newport News currently stops at stations in Richmond, Williamsburg, and Newport News.

In January 2008, DRPT issued the *Advancing Passenger Rail in the Commonwealth of Virginia, Short-Term Action Plan, Part 1*. The Newport News to Washington, DC service corridor was identified as an opportunity to provide enhanced passenger rail service in Virginia. The Action Plan provides for one additional round-trip per day on the Peninsula operating at conventional speeds and is consistent with Amtrak's plans for the route. This proposed short-term service expansion is reflected in the No Action Alternative.

2.5.3 Alternative 1 - Peninsula Conventional/Southside Higher Speed Rail

Alternative 1 serves both sides of the James River. It includes three daily round-trip trains operating at conventional speeds along the Peninsula/CSXT route and new higher speed passenger rail service along the Southside of the James River with six daily round-trip trains. Figure 2-3 shows Alternative 1.

The new Southside service would begin in Richmond, travel through Petersburg and terminate in downtown Norfolk. The portion of the Southside route between Richmond Main Street Station and Petersburg, including station improvements in Petersburg, is being evaluated as part of the SEHSR Tier II EIS. This Richmond/Hampton Roads Passenger Rail Project alternative and the SEHSR Project would share the same route between Richmond and Petersburg. Once the SEHSR alignment for this section is finalized, which is anticipated in fall 2010, subsequent analysis would include the engineering, design and construction of these improvements if this route is part of the selected alternative. This Tier I Draft EIS provides generalized cost estimates for the Petersburg section to permit equal evaluation of the alternatives and to enable this project to be considered independently of the SEHSR project.

Alternative 1 on the Southside Higher Speed Rail route continues from Petersburg to Suffolk and then uses a portion of the right-of-way of the abandoned Virginian Railway Line between Kilby and Algren. This line parallels the existing operating NS freight line between Suffolk and Norfolk. A new connection between the existing NS line and the abandoned Virginian Railway line would be required in the vicinity of Kilby. This connection would likely require new right-of-way to accommodate the transition between lines. This route alignment decreases the level of potential impact to the existing freight operations in this area. The existing double track on the NS line between Petersburg and Norfolk is augmented with a single passing siding, the Ivor Middle Track, about ½-mile long. Other middle tracks existed earlier, when Norfolk and Western operated passenger trains on the route and the sidings allowed faster trains to run past slower freight trains. New passenger operations would require more passing capacity, possibly through reinstallation and extension of former sidings. The use of the abandoned Virginian Railroad right-of-way between Kilby and Norfolk would reduce impacts to freight railroad operations but would require considerable expense to acquire and reintroduce railroad operations. Signal improvements would need to be installed to meet FRA regulations for territories operating at 90 or 110 mph. Requirements vary for the two target speeds.

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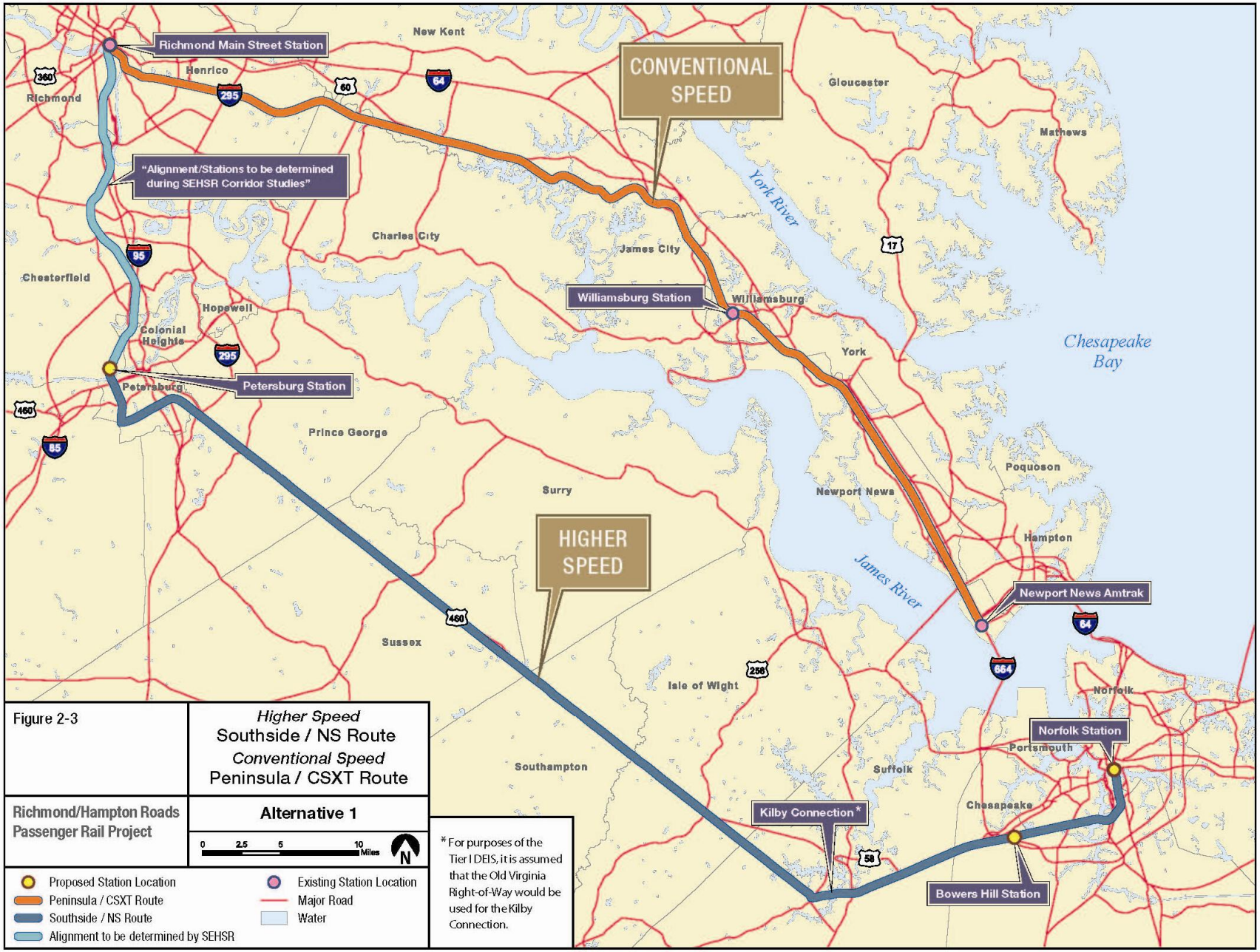
Richmond Main Street Station
"Alignment/Stations to be determined during SEHSR Corridor Studies"
CONVENTIONAL SPEED
HIGHER SPEED
Williamsburg Station
Petersburg Station
Newport News Amtrak
Norfolk Station
Kilby Connection*
Bowers Hill Station
New Kent
Henrico
Richmond
Chesterfield
Hopewell
Colonial Heights
Petersburg
Prince George
Surry
Sussex
Southampton
Isle of Wight
Suffolk
Chesapeake
Portsmouth
Norfolk
Gloucester
Mathews
York
Poquoson
Newport News
Hampton
James City
Charles City
Williamsburg
York River
James River
Chesapeake Bay
Figure 2-3
Higher Speed
Southside / NS Route
Conventional Speed
Peninsula / CSXT Route
Richmond/Hampton Roads Passenger Rail Project
Alternative 1
0 2.5 5 10 Miles
N
Proposed Station Location
Existing Station Location
Peninsula / CSXT Route
Major Road
Southside / NS Route
Water
Alignment to be determined by SEHSR
*For purposes of the Tier I DEIS, it is assumed that the Old Virginia Right-of-Way would be used for the Kilby Connection.

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The stations proposed for this alternative include the existing Richmond Main Street, Williamsburg and Newport News stations on the Peninsula route; and the Petersburg, proposed Bowers Hill and proposed Downtown Norfolk stations on the Southside route. The Richmond Main Street Station would be improved to accommodate higher speed rail service. However, the cost of these improvements has not been evaluated for this Tier I Draft EIS and will be included in corridor development plans for the Washington, DC to Richmond corridor. The Washington, DC to Richmond corridor is scheduled to complete these improvements prior to implementation of the Richmond/Hampton Roads Passenger Rail Project. All stations would have parking facilities. In the case of Norfolk, existing downtown parking facilities could be used. Existing parking at the Richmond station may be augmented to accommodate more parking spaces.

Potential station locations in the Petersburg area are being evaluated as part of the SEHSR Tier II EIS, and preliminary costs have been included in this Tier I Draft EIS for comparison purposes. The stations in Bowers Hill and Downtown Norfolk would involve the construction of new stations. The Bowers Hill Station would serve the large Southside geographic area beyond Norfolk and Portsmouth. This location could provide a strong interface between passenger rail service and automobile traffic at I-264 and the Hampton Roads Beltway (I-64/664). Preliminary analysis suggests that a suitable location could be established just east of the Algren track connection at the crossing of Homestead Road. Other potential station sites examined did not have adequate highway access or sufficient space for station facilities. The station in Downtown Norfolk is located just north of the Elizabeth River and east of the Harbor Park baseball stadium, terminating near I-264 and Park Avenue. The Downtown Norfolk station would serve the markets of Norfolk and Portsmouth, providing a central location with access to and from the regional transportation network. A planned light rail line serving this region could provide an additional local transit interface.

2.5.4 Alternative 2a Peninsula Higher Speed Rail/Southside Conventional

This Alternative also serves the Richmond to Hampton Roads Corridor from both sides of the James River (Figure 2-4). The Peninsula corridor would be served by six daily round-trips operating at higher speeds of either 90 mph or 110 mph along the Peninsula/CSXT route with a new station serving Downtown Newport News rather than the existing Amtrak Station. In addition, new conventional speed passenger rail service along the Southside/NS route would be added. The stations proposed for this alternative include the existing Richmond Main Street and Williamsburg stations, in addition to a new Downtown Newport News Station north of the James River; and the Petersburg and proposed new stations at Bowers Hill and Downtown Norfolk stations south of the James River as shown in Figure 2-4.

As discussed under Alternative 1, the improvements to Richmond Main Street Station to accommodate higher speed rail would be completed as part of the Washington, DC to Richmond corridor development plan, and the related costs are not included in this Tier I Draft EIS. Traffic impacts associated with the Petersburg area station improvements will be defined through the SEHSR Tier II EIS currently underway and preliminary costs have been included in this Tier I Draft EIS. New stations would be constructed at Bowers Hill and Downtown Norfolk. In addition, this alternative would involve a new station on the Peninsula/CSXT route in Downtown Newport News to provide better regional access to the Newport News travel market, including local downtown destinations and employment centers, as well as improved access to the regional transportation network and local transit connections. The station site is west of I-664, between 26th and 28th Streets and in close proximity to SH-143 and the Monitor-Merrimac Memorial Bridge Tunnel. The site also could accommodate additional facilities related to passenger rail operations, including an efficient turn-back and a future storage and maintenance facility. All stations would provide some level of parking. The new station at Newport News would provide park-and-ride facilities while existing stations would receive some level of upgraded parking to their current condition.

The current mix of single and double track segments along the Peninsula/CSXT alignment would need to be augmented to accommodate the extra traffic and the heightened differential in speed between freight and passenger traffic. This would take the form of extensions of existing double track and sidings or the construction of additional sidings. The elimination or physical improvement of grade crossings along the line would also need to be undertaken. Signal improvements would need to be installed to meet FRA regulations for territories operating at 90 or 110 mph. Requirements vary for the two target speeds.

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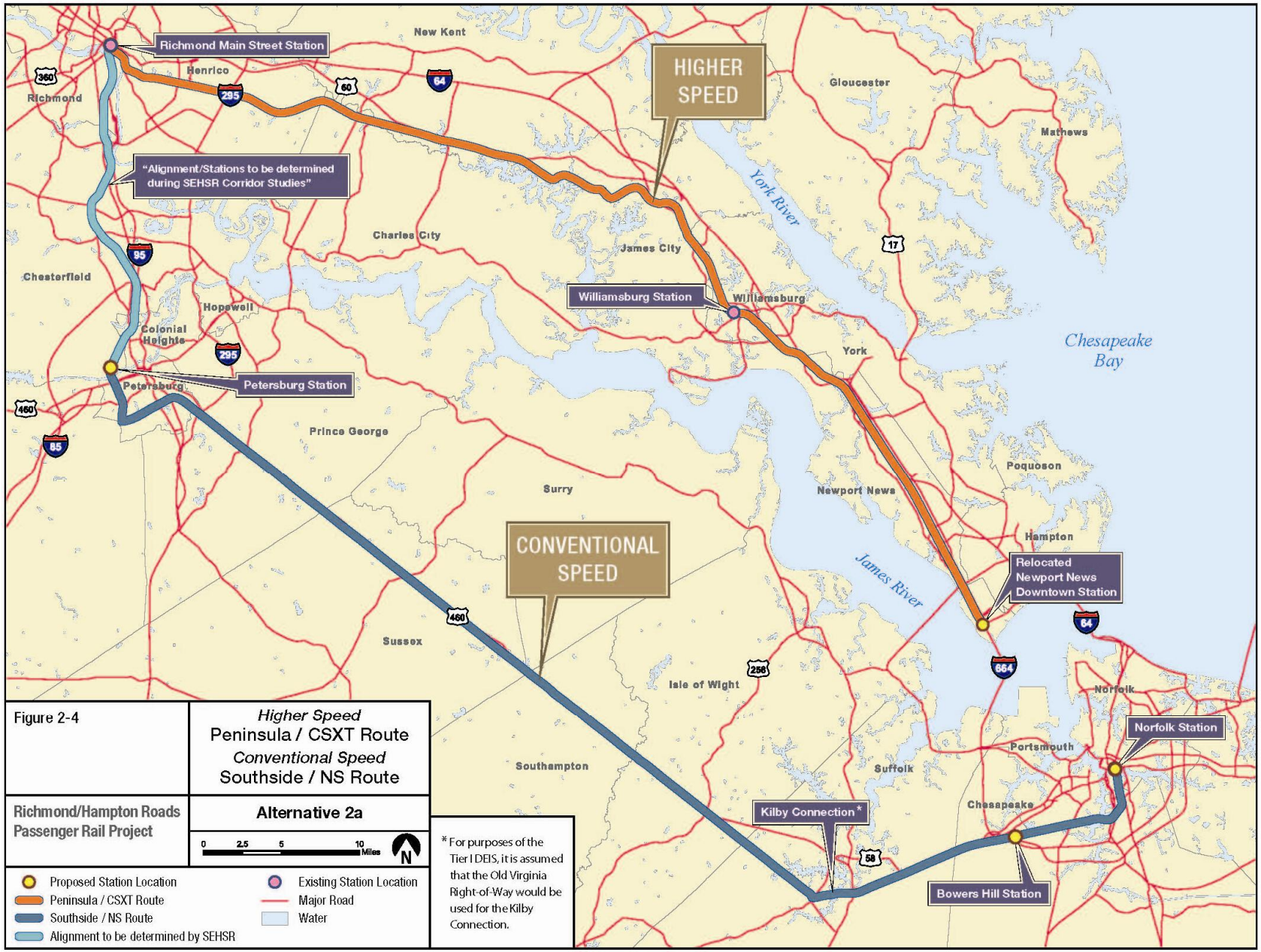
Richmond Main Street Station
"Alignment/Stations to be determined during SEHSR Corridor Studies"
HIGHER SPEED
Williamsburg Station
Petersburg Station
CONVENTIONAL SPEED
Relocated Newport News Downtown Station
Norfolk Station
Kilby Connection*
Bowers Hill Station
New Kent
Henrico
Richmond
Chesterfield
Hopewell
Colonial Heights
Petersburg
Charles City
James City
Williamsburg
Gloucester
Mathews
York River
York
Chesapeake Bay
Prince George
Surry
Sussex
Isle of Wight
Southampton
Suffolk
Newport News
Poquoson
Hampton
James River
Norfolk
Portsmouth
Chesapeake
Figure 2-4
Higher Speed
Peninsula / CSXT Route
Conventional Speed
Southside / NS Route
Richmond/Hampton Roads Passenger Rail Project
Alternative 2a
0 2.5 5 10 Miles
N
Proposed Station Location
Existing Station Location
Peninsula / CSXT Route
Major Road
Southside / NS Route
Water
Alignment to be determined by SEHSR
* For purposes of the Tier I DEIS, it is assumed that the Old Virginia Right-of-Way would be used for the Kilby Connection.

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The corridor south of the James River would be served by three daily round-trip trains operating at maximum conventional speeds of 79 mph on the Southside/NS route. Stations would include Norfolk, Bowers Hill, Petersburg and Richmond Main Street Station. All stations would provide some level of parking. The new stations at Bowers Hill and Downtown Norfolk would provide parking facilities while existing stations would receive some level of upgraded parking to their current condition.

The existing double track on the NS line between Petersburg and Norfolk is augmented with a single passing siding, the Ivor Middle Track, about ½-mile long. Other middle tracks existed earlier, when Norfolk and Western operated passenger trains on the route and the sidings allowed faster trains to run past slower freight trains. New passenger operations would require more passing capacity, possibly through reinstallation and extension of former sidings. The use of the abandoned Virginian Railroad right-of-way between Kilby and Norfolk would reduce impacts to freight railroad operations but would require considerable expense to acquire and reintroduce railroad operations.

2.5.5 Alternative 2b Peninsula Higher Speed Rail Only

This Build Alternative would only serve the Peninsula/CSXT route by providing higher speed passenger rail service between Richmond and downtown Newport News. (See Figure 2-5). The stations proposed for this alternative include the existing Richmond Main Street and Williamsburg stations, in addition to the new Downtown Newport News station, as shown in Figure 2-5 and discussed under Alternative 2a. Existing conventional speed services would be eliminated in favor of the higher speed trains.

All stations would provide some level of parking. New stations would provide park-and-ride facilities while existing stations would receive some level of upgraded parking to their current condition.

The current mix of single and double track segments along the Peninsula/CSXT alignment would need to be augmented to accommodate the extra traffic and the heightened differential in speed between freight and passenger traffic. This would take the form of extensions of existing double track and sidings or the construction of additional sidings. The elimination or physical improvement of grade crossings along the line would also need to be undertaken. Signal improvements would need to be installed to meet FRA regulations for territories operating at 90 or 110 mph. Requirements vary for the two target speeds.

2.6 Alternatives Evaluated in the Tier I Draft EIS

For purposes of this Tier I Draft EIS, the alternatives as described in Section 2.5 are being evaluated. In order to consistently evaluate the impacts associated with new service operating over the two routes, the chapters of this document have been formatted to discuss the affected environment of each route with the Southside/NS route appearing first, followed by the Peninsula/CSXT route. The environmental consequences write-up provides a discussion of impacts for the Status Quo Alternative, No Action Alternative and the Build Alternatives. The discussion examines the potential physical impacts and where applicable, the differences in impacts based on operating speeds and frequency of service. Table 2-1 summarizes the characteristics of the alternatives being evaluated in this Tier I Draft EIS.

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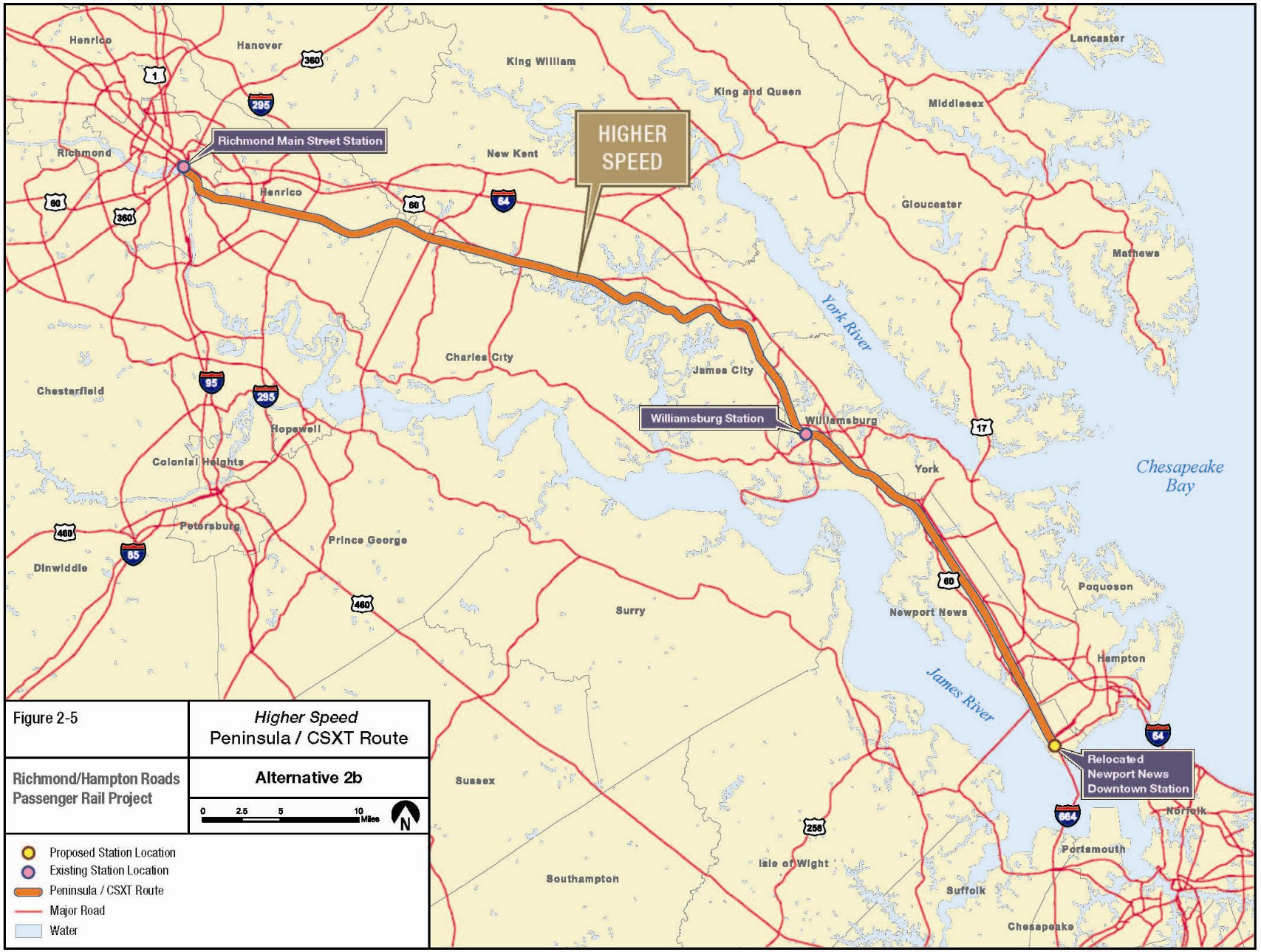
HIGHER SPEED
Richmond Main Street Station
Williamsburg Station
Relocated Newport News Downtown Station
Henrico
Hanover
King William
King and Queen
Lancaster
Middlesex
Richmond
New Kent
Gloucester
Mathews
York River
Charles City
James City
Chesterfield
Hopewell
Williamsburg
Colonial Heights
York
Chesapeake Bay
Petersburg
Prince George
Dinwiddie
Surry
Newport News
Poquoson
Hampton
James River
Sussex
Norfolk
Portsmouth
Isle of Wight
Southampton
Suffolk
Chesapeake
Figure 2-5
Higher Speed
Peninsula / CSXT Route
Richmond/Hampton Roads Passenger Rail Project
Alternative 2b
0 2.5 5 10 Miles
N
Proposed Station Location
Existing Station Location
Peninsula / CSXT Route
Major Road
Water

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