



## COMMONWEALTH of VIRGINIA

Jennifer L. Mitchell  
Director

DEPARTMENT OF RAIL AND PUBLIC TRANSPORTATION  
600 EAST MAIN STREET, SUITE 2102  
RICHMOND, VA 23219-2416

(804) 786-4440  
FAX (804) 225-3752  
Virginia Relay Center  
800-828-1120 (TDD)

December 1, 2016

The Honorable Thomas K. Norment, Co-Chair  
Senate Finance Committee  
General Assembly Building, Room 626  
Richmond, Virginia 23219

The Honorable Timothy D. Hugo, Chairman  
Joint Commission on Transportation  
Accountability  
General Assembly Building, Room 523  
Richmond, Virginia 23219

The Honorable Emmett W. Hanger, Co-Chair  
Senate Finance Committee Chairman  
General Assembly Building, Room 503  
Richmond, Virginia 23219

The Honorable Chris S. Jones, Chairman  
House Appropriations Committee  
General Assembly Building, Room 948  
Richmond, Virginia 23219

The Honorable Charles W. Carrico, Chairman  
Senate Transportation Committee  
General Assembly Building, Room 330  
Richmond, Virginia 23219

The Honorable Ronald A. Villanueva,  
House Transportation Committee  
General Assembly Building, Room 326  
Richmond, Virginia 23219

Dear Chairmen:

Please find attached the final report on the evaluation of the costs of providing passenger rail services to the Town of Bedford and the availability of funding for services, request by the 2016 General Assembly under Item 449 E, Chapter 780, Code of Virginia.

Sincerely,

A handwritten signature in cursive script that reads "Jennifer L. Mitchell".

Jennifer L. Mitchell  
Director, Virginia Department of Rail and Public Transportation

*Final Report*

# *Bedford, VA* Intercity Passenger Rail Service Study

November 2016



*Prepared by:*



# TABLE OF CONTENTS

- Executive Summary ..... 2
- 1. Introduction and Purpose..... 3
- 2. Background and Review of Study Area..... 3
  - Description of Route 46..... 3
  - Bedford’s Population..... 4
  - Existing Transportation Connectivity ..... 4
- 3. Inventory of Rail Route and Existing Conditions..... 5
  - Description of Rail Route ..... 5
  - Description of Station Site..... 6
  - Norfolk Southern Passenger Platform Requirements..... 6
- 4. Rail Service Schedule and Financial Analysis..... 9
  - Ridership Analysis..... 9
  - Financial Analysis ..... 10
- 5. Station and Platform Needs Assessment ..... 10
  - Utility Infrastructure ..... 10
  - Platform on Main Line ..... 11
  - Platform Length and Adjacent Property ..... 11
- 6. Service and Capital Costs Estimate ..... 14
- 7. Potential Funding Sources for Passenger Rail Service ..... 15
- 8. Process for Establishing Passenger Rail Service in Virginia..... 18
  - Pre-Construction Activities..... 19
  - Initial Planning ..... 19
  - Initial Engagement..... 19
  - Feasibility Study..... 19
  - Environmental Analysis ..... 19
  - Site Selection..... 19
  - Design..... 19
  - Secure Sources of Funding..... 19
  - Construction Activities..... 19
  - Negotiate Agreements ..... 19
  - Land Acquisition ..... 20
  - Construction ..... 20
  - Revenue Activities..... 20
  - Initiate Service ..... 20
  - Operations and Maintenance ..... 20
- Summary of Findings ..... 20
- Appendices ..... 21

## List of Figures

- Figure 1: Study Area Map ..... 4
- Figure 2: Norfolk Southern Railroad Section through Preferred Station Site Location ..... 5
- Figure 3: Preferred Station Site Location ..... 6
- Figure 4: Notes from site visit on August 18, 2016 ..... 7
- Figure 5: View from the top of North Street Bridge..... 8
- Figure 6: View from the top of North Street Bridge of the NS mainline track..... 8
- Figure 7: View looking west from the locally preferred site on the south side of the tracks..... 8
- Figure 8: Approximate ridership projections for proposed Roanoke service expansion..... 9
- Figure 9: View looking east from locally preferred station site on the south side of the tracks ..... 11
- Figure 10: View looking west from locally preferred station site on the south side of the tracks ..... 11
- Figure 11: Rendering of 1000 foot high level platform..... 12
- Figure 12: Rendering of 1000 foot low level platform..... 13
- Figure 13: Funding options for establishing passenger rail station..... 15
- Figure 14: Roles of stakeholder entities in the process of expanding passenger rail roles..... 18

## List of Tables

- Table 1: Bedford County and Town of Bedford population ..... 4
- Table 2: Approximate arrival times and departure times ..... 9
- Table 3: Proposed Roanoke service expansion financial analysis..... 10
- Table 4: Cost comparison of other station improvements..... 14
- Table 5: Cost comparison of high level and low level platforms..... 15
- Table 6: Available funding programs for establishing a passenger rail station ..... 17

## EXECUTIVE SUMMARY

The Virginia Department of Rail and Public Transportation (DRPT), Amtrak, Norfolk Southern Railway, and the City of Roanoke are extending Amtrak Route 46 from Lynchburg, VA to Roanoke, VA with service beginning in the fall of 2017. The Town of Bedford, Virginia has requested service to Bedford be added as a part of the Lynchburg to Roanoke expansion. DRPT has stated that two years of ridership data is necessary on the expanded route to Roanoke before any changes are considered to Route 46 service.

In 2016, the Virginia General Assembly included a line item in the State Budget (HB30) that states:

*“The Department of Rail and Public Transportation shall evaluate both the costs of providing service to the Town of Bedford as well as the available funding and provide this information to the Chairmen of the House Committees on Transportation and Appropriations, the Senate Committees on Transportation and Finance, and the Joint Commission on Transportation Accountability no later than December 1, 2016.”*

The purpose of this study is to evaluate the cost and infrastructure needs associated with providing intercity passenger rail service to the Town of Bedford, and identify available funding sources. This study does not recommend for or against service. This study provides an order of magnitude approach to explore the infrastructure requirements and cost of establishing a passenger rail stop in Bedford, VA.

When providing a cost analysis for a station location in Bedford, it is important to understand there may be additional network improvements outside of the Town limits such as sidings, crossovers, signal improvements, or those otherwise necessary to accommodate additional service, or additional stops introduced by a new station. Those network improvements are typically modeled

through a study that exceeds the scope and timeline of this report, and are not part of the cost analysis provided for a station in this report.

A summary of some of the findings are:

- ▶ The infrastructure would require an approximate capital investment between \$5.7 million and \$11.4 million depending on final site and platform design.
- ▶ A high level platform at the site ranges from \$9 million to \$11.4 million with a mid-range point of \$9.9 million. A high level platform requires an additional 1,300 feet of passenger rail siding.
- ▶ A low level platform ranges between \$5.7 million and \$7.3 million with a mid-point of \$6.3 million. Low level platforms present some ADA accessibility challenges.
- ▶ The local preferred station site selected by a Town of Bedford study would require relocating utility infrastructure including overhead powerlines and underground water infrastructure.
- ▶ The 2017 extension of Route 46 to Roanoke, VA is projected to add an additional 38,000 riders annually once the route is extended from Lynchburg to Roanoke, VA. By including a passenger rail stop in Bedford, VA it is estimated to add an additional 2,800 riders per year to the Amtrak Route 46/ Northeast Corridor.
- ▶ Increasing the route by 2,800 passengers a year would decrease Virginia’s Amtrak operating payment by approximately \$170,000 annually.

Potential funding sources for the capital investment in infrastructure include federal transportation grants (such as USDOT TIGER and FRA programs); state funding, local funding and public-private partnerships. The following table lists identified funding programs.

Funding Program	Administered By
Intercity Passenger Rail Operating and Capital Fund (IPROC)	DRPT
Rail Enhancement Fund (REF)	DRPT
Intercity Passenger Rail Service Corridor Capital Assistance Program	USDOT
Transportation Investment Generating Economic Recovery (TIGER)	USDOT

## 1. INTRODUCTION AND PURPOSE

In 2013, an agreement was reached between the Commonwealth of Virginia, Amtrak, Norfolk Southern Railway, and the City of Roanoke to return passenger rail service to Roanoke, Virginia. That service is scheduled to begin operation in the fall of 2017. The Town of Bedford, Virginia has requested a stop in Bedford as a part of the extension to Roanoke. A stop in Bedford is not planned, and the Virginia Department of Rail and Public Transportation (DRPT) has stated that two years of ridership data is necessary on the expanded route to Roanoke before any changes are considered to Route 46 service.

In 2016, the Virginia General Assembly included a line item in the State Budget (HB30) that states:

*“The Department of Rail and Public Transportation shall evaluate both the costs of providing service to the Town of Bedford as well as the available funding and provide this information to the Chairmen of the House Committees on Transportation and Appropriations, the Senate Committees on Transportation and Finance, and the Joint Commission on Transportation Accountability no later than December 1, 2016.”*

The purpose of this study is to evaluate the capital and operational costs associated with providing intercity passenger rail service to the Town of Bedford, and identify available funding sources; it does not recommend for or against service. The Bedford-Franklin Regional Rail Initiative (BFRRRI) issued a report in October 2015, which designated a locally preferred site if passenger service were to be initiated in the future. While DRPT and Norfolk Southern have not endorsed this site, the BFRRRI report provides a scenario that is useful for the cost analysis in this report. To meet the requirements and deadline established by the Virginia General Assembly, DRPT contracted with WSP | Parsons Brinckerhoff to conduct an objective and independent intercity passenger rail study to determine the cost for initiating service in the Town of Bedford, Virginia.

This study provides an order of magnitude approach to explore the infrastructure requirements and cost of establishing a passenger rail stop in Bedford. The study will take the Town of Bedford’s locally preferred alternative site as a starting point for assessing the broader infrastructure needs and cost of establishing a platform and station.

This study accomplished the following tasks:

1. Review of the study area and rail route
2. Review and inventory of existing conditions

3. Analysis of passenger rail service schedules and financials
4. Assessment of station and platform needs
5. Estimate of passenger rail service and capital costs
6. Identification of potential funding sources
7. Highlight the process for establishing passenger rail service in Virginia

## 2. BACKGROUND AND REVIEW OF STUDY AREA

The Town of Bedford is located 28 miles west of Lynchburg, Virginia and is 27 miles east of Roanoke, Virginia. The consulting team reviewed existing reports, collected ridership and economic data and met with state and local stakeholders to gather information for consideration in conducting this study. Several studies, reports and plans that were previously completed provided background information and data that helped frame the development of this study. Those documents include:

- ▶ Roanoke Passenger Platform B&F Bids (March 2016)
- ▶ Town of Bedford Passenger Rail Station Feasibility Study and Conceptual Plan (March 2016)
- ▶ Bedford/Franklin Regional Rail Initiative (October 2015)
- ▶ RTC Model Study of Proposed Passenger Train Service: Between Lynchburg and Roanoke, Virginia (September 2013)
- ▶ Virginia Statewide Rail Plan (2013)
- ▶ Statewide Rail Plan: Commonwealth of Virginia (December 2008)

Amtrak conducted a ridership forecast analysis to understand the operational costs if a potential Bedford passenger rail stop. Additionally, an infrastructure and rail route inventory was conducted to obtain the infrastructure needs and cost of adding an Amtrak stop on the locally preferred site selected by the Town of Bedford in its March 2016 report.

### Description of Route 46

Route 46 is a state-supported Northeast Regional service operating daily from Lynchburg, Virginia to Boston, with stops including Washington, DC, Philadelphia, and New York. DRPT is working with Norfolk Southern, Amtrak, and the City of Roanoke to extend this service

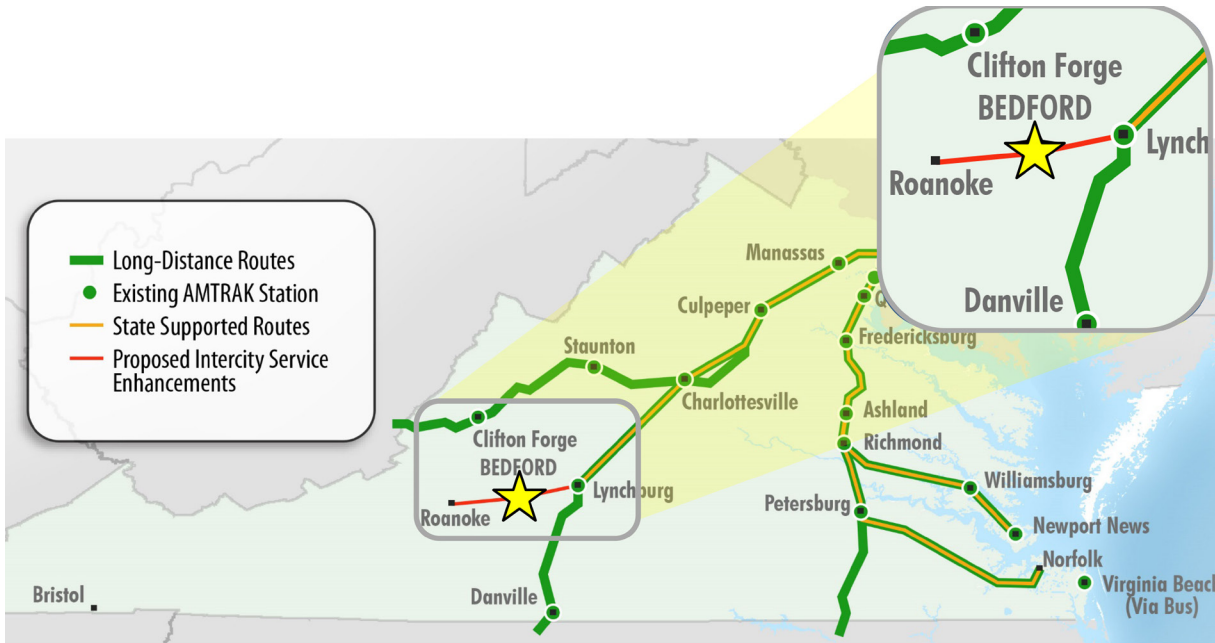


Figure 1: Study Area Map

from Lynchburg to Roanoke in 2017. If a Bedford Station were added, it would be the second stop on Route 46 (northbound).

### Bedford's Population

The 2010 census data list the city of Bedford population at 6,222. Since 2013, the city has reverted to town status, which means that Bedford County and the Town of Bedford are reported as a single population count. However, the US census bureau population did provide a 2015 population estimate for the Town of Bedford (6,561).

	2010	2015* (Estimate)
Bedford County	68,676	77,724
Town of Bedford	6,222	6,561

Table 1: Bedford County and Town of Bedford Population  
Source: US Census Bureau, 2010 Census and 2015 Population Estimate

\*The City of Bedford reverted to town status in July 2013. As a result the population is listed as the City of Bedford in the 2010 census are classified as the Town of Bedford in the 2015 estimate

### Existing Transportation Connectivity

The Town of Bedford is located 28 miles west of Lynchburg, Virginia and is 27 miles east of Roanoke, Virginia. Transportation in the study area is principally served by US Route 460, one of the primary east-west roadways in Virginia. Route 460, functionally classified as a rural principal arterial by the Virginia Department of Transportation (VDOT), connects Bedford County and the City of Bedford to the metropolitan areas of Lynchburg and Roanoke, and to the major north-south routes of Interstate 81 and Route 29.

The Smart Way Connector is a thruway bus service from the Lynchburg Amtrak Station to Roanoke via a stop in Bedford, Virginia at the Bedford Welcome Center. This system expands to Blacksburg on the weekends while fall and spring semesters are in session at Virginia Polytechnic Institute and State University (Virginia Tech). From summer 2015 to summer 2016, the thruway connected a total of 6,225 train passengers from Roanoke, Blacksburg and Bedford to the Lynchburg Amtrak Station.

The service offers two round trips a day from Bedford to the Lynchburg Amtrak Station, taking approximately 35 minutes to travel from the Welcome Center to the Amtrak Station. The fare is \$4 with a reduced rate of \$2 for seniors, the disabled and Medicare recipients. Children under five ride free with an adult. Monthly unlimited passes are available for a \$60 fee.

While the Amtrak passenger thruway service is scheduled to cease operation when Amtrak passenger rail service to Roanoke begins, there is the potential to continue the thruway route to provide Bedford and Blacksburg connectivity to the Roanoke and Lynchburg Amtrak Stations.

### 3. INVENTORY OF RAIL ROUTE AND EXISTING CONDITIONS

When providing a cost analysis for a station location in Bedford, it is important to understand there may be additional rail network improvements outside of the Town limits such as sidings, crossovers, signal improvements, or those otherwise necessary to accommodate additional intercity passenger rail service and the introduction of additional stop between Lynchburg and Roanoke. Those network improvements are typically modeled through a study that is required by the railroad company that owns the tracks along the corridor. Norfolk Southern Railroad (NS) is the Class I carrier that owns the track infrastructure and rail easement in Bedford. Additional studies required by NS exceed the scope and timeline of this report, and are not part of the cost analysis provided for a new station in this report.

An inventory of the existing infrastructure in Bedford was conducted with a specific focus on the track infrastructure adjacent to the locally preferred station site identified by the Town of Bedford in the BFRRI in 2015 and the Town of Bedford Passenger Rail Station Feasibility Study and Conceptual Plan in March 2016. As stated previously, the preferred site location (located north of the Town of Bedford Municipal Building at the intersection of Court

Street and Plunkett Street) provides a useful scenario to estimate potential costs, even if the site is not necessarily the only possible location for a future station. Therefore, this section also compares the existing track infrastructure to the general infrastructure requirements set by NS to accommodate passenger rail service at a specific location for a station.

#### Description of Rail Route

There are three existing railroad tracks through downtown Bedford and along the preferred station site location that are owned and operated by Norfolk Southern Railroad (NS). Below is a description of these railroad tracks:

**Single Main Line Track:** There is one existing main line track on the southernmost side of the existing rail corridor. The maximum authorized speed according to the Norfolk Southern track chart is 50 mph.

**Passing Siding Track:** There is an approximately 2.62 mile long passing siding track that begins approximately 0.36 miles east of the preferred station site (mile post N-228.34) and ends approximately 2.26 miles west of the preferred station site (mile post N-230.96). This passing siding track sits just north of the main line track.

**Industrial Siding Track:** There is an approximately 1.45 mile long stub-ended industrial siding track that begins approximately 0.17 miles west of the preferred station site (mile post N-228.87) and runs to the east and ends at approximately mile post N-227.42. This industrial siding track sits just north of the passing siding track.

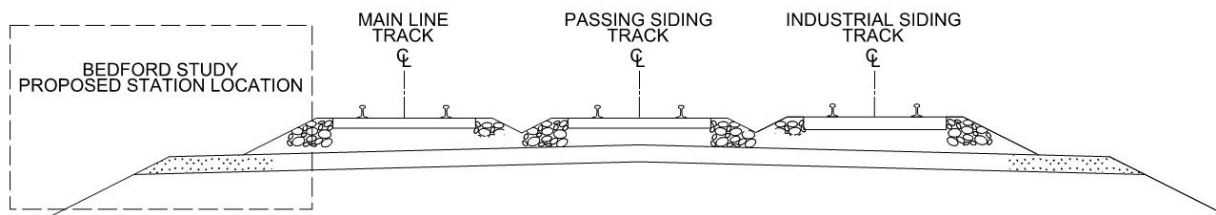


Figure 2: Norfolk Southern Railroad section through preferred station site location (looking west)

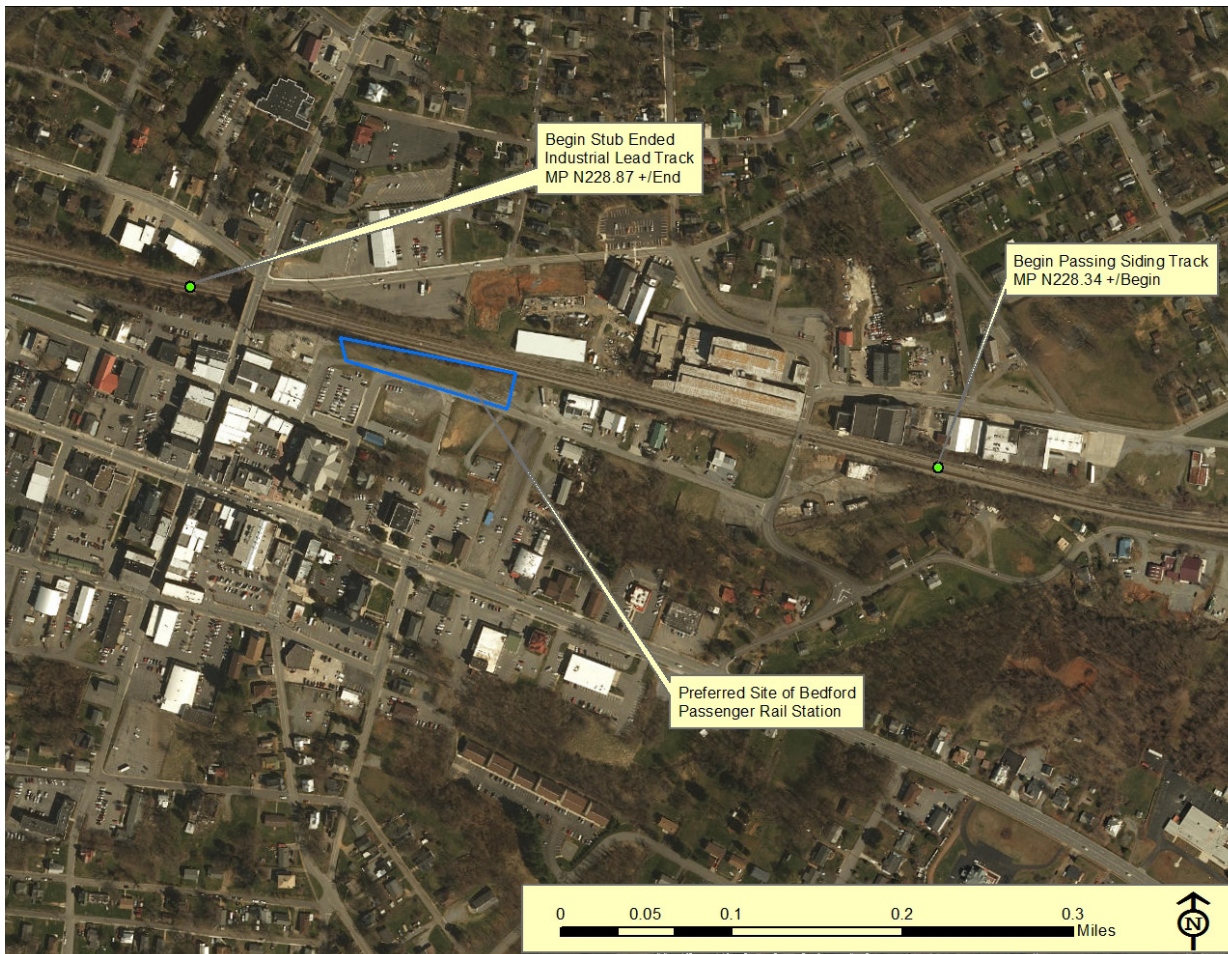


Figure 3: Preferred Station Site Location

### Description of Station Site

The locally preferred site location for the Bedford Rail Station is situated at approximately milepost N-228.70 along the NS tracks and 0.12 miles east of the N. Bridge Street overpass and 0.2 miles west of the Grove Street at-grade crossing. The existing grade of the rail corridor through this section of the line is approximately 10 feet lower than the existing grade on the south side of the tracks (locally preferred site location) and is approximately 20 feet lower than the existing grade on the north side of the tracks.

### Norfolk Southern Passenger Platform Requirements

As the owner of the track on this corridor, NS has policies and requirements that must be considered when evaluating new passenger service in Bedford. In NS's "General Principles Guiding Norfolk Southern's Evaluation of Intercity Passenger and Commuter Passenger Rail Proposals" (Appendix C) and its passenger station requirements (Appendix D), Norfolk Southern (NS)

set forth the conditions for permitting new or additional passenger rail service on their tracks. Below are some of the requirements that will impact the Bedford Rail Station site location and layout:

- ▶ For approved joint use tracks (both freight and passenger service sharing the same track), platforms must be low level platforms located 5'-4" from centerline of track and 0'-8" above top of rail. No high level platforms are allowed adjacent to freight tracks shared with passenger service. NS will only consider high level platforms when the passenger service is prepared to construct dedicated station tracks.
- ▶ Mini-high level platforms may be constructed alongside the main low level platform to provide level boarding for passengers who require ADA access. The platform edge of the mini-high level platform may be constructed no closer than 8'-6" from the centerline of the adjacent track, if the track is shared with freight trains.



- ▶ In the situation where a passenger service is proposed for sharing Norfolk Southern right-of-way, the adjacent passenger track must be separated by a minimum of 26-foot track centers to the NS tracks and a barrier fence shall be installed between the two rail lines.
- ▶ In the event that proposed station facilities are located across the tracks from a station platform, overhead bridges or underground tunnels will be required. At grade pedestrian crossings are not permitted.
- ▶ Single-track platforms may be permitted in single-track territory. If the line is double-tracked, the passenger authority or station owner will bear the full cost of construction for dual track access.

The locally preferred station site is located on the main line, which is the track that the railroad uses as the primary track for operational purposes. NS's requirements and Class I carrier best practices for main line safety will be required to follow operational and infrastructure constraints for the site. Per NS passenger policy, an operational feasibility study will be required, and conducted by NS, in order to fully understand all potential impacts to the rail corridor. As NS states, the proposed passenger operation must create "transparency" in the affected rail system. Transparency is the capacity for passenger trains and freight trains to operate without delay, however minimal, to each other, while still allowing for route maintenance. As with the extending Amtrak 46 route to Roanoke, a similar operational study was conducted at a cost of approximately \$350,000. Before further design efforts can begin, a similar operational study will need to be conducted for potentially implementing an intercity passenger rail station at Bedford, VA, within a similar costs for the study. These will be further explored later in this report.

A summary of findings from a site visit in August 2016 are listed in Figure 4.

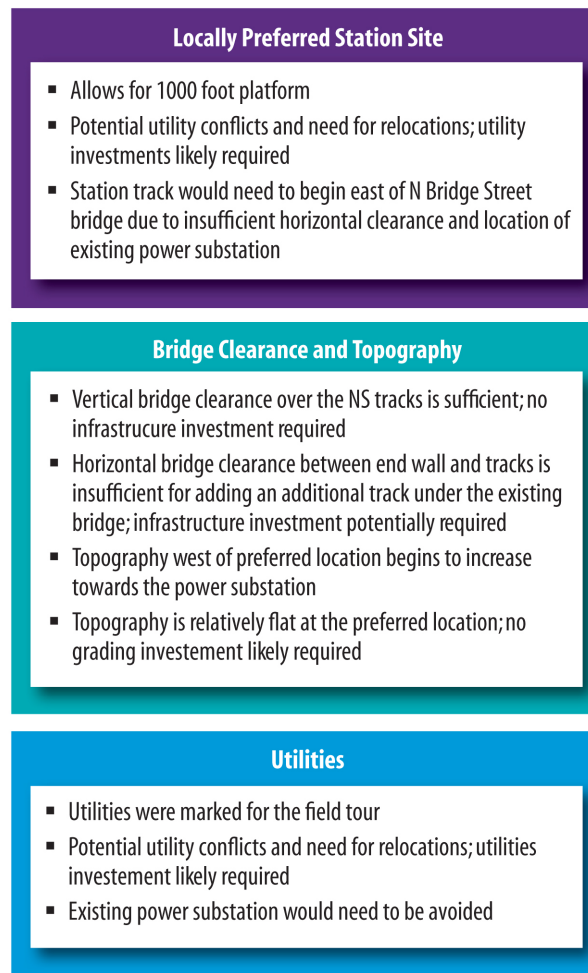


Figure 4: Notes from site visit on August 18, 2016



Figure 5: North Street Bridge looking south from the north side of the tracks shows the constraints on the Town's preferred site due to the existing road bridge.



Figure 6: View from the top of North Street Bridge of the NS mainline track.



Figure 7: View looking west from the locally preferred site on the south side of the tracks. The mainline is the left most track.

## 4. RAIL SERVICE SCHEDULE AND FINANCIAL ANALYSIS

Amtrak established a proposed schedule for expanding Amtrak Route 46 service to Roanoke, via Lynchburg with service arriving in Roanoke ranging from 8:58pm to 9:55pm depending on which train route and which day of the week. By including a station in Bedford, the schedule was adjusted for the Amtrak estimated arrival times for Bedford and Roanoke. The following table defines the approximate arrival times for southbound and northbound trains for each scenario.

The following table defines the approximate departure times for eastbound trains for each scenario.

### Ridership Analysis

At the request of DRPT, Amtrak conducted a ridership analysis and estimate of additional operating costs and revenues associated with a potential Bedford passenger rail stop. Under the current planned expansion to Roanoke, Amtrak projects approximately 38,000 passengers per year. Amtrak’s ridership projection with the addition of a Bedford stop generates 2,800 additional passengers annually. This would total approximately 40,800 passengers on Route 46 between Roanoke and Lynchburg. Broken down to a daily number, a Bedford stop results in approximately 4 roundtrips per day.

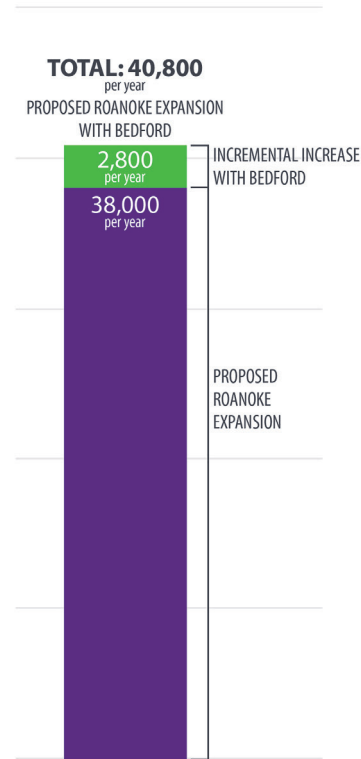


Figure 8: Approximate ridership projections for proposed Roanoke service expansion

		Schedule without Bedford station stop			Schedule with Bedford station stop		
Northbound	Roanoke	Train 156 (Saturdays, Sundays & Holidays) 8:40am	Train 176 (Weekdays) 6:19am		Train 156 (Saturdays, Sundays & Holidays) 8:40am	Train 176 (Weekdays) 6:19am	
	Bedford	NA	NA		Train 156 (Saturdays, Sundays & Holidays) 9:18am	Train 176 (Weekdays) 6:57am	
	Lynchburg	Train 156 (Saturdays, Sundays & Holidays) 9:59am	Train 176 (Weekdays) 7:38am		Train 156 (Saturdays, Sundays & Holidays) 9:59am	Train 176 (Weekdays) 7:43am	
Southbound	Lynchburg	Train 147 (Sundays & Holidays) 8:14pm	Train 145 (Saturdays) 8:29pm	Train 171 (Weekdays) 8:36pm	Train 147 (Sundays & Holidays) 8:12pm	Train 145 (Saturdays) 8:32pm	Train 171 (Weekdays) 8:39pm
	Bedford	NA	NA	NA	Train 147 (Sundays & Holidays) 8:52pm	Train 145 (Saturdays) 9:12pm	Train 171 (Weekdays) 9:19pm
	Roanoke	Train 147 (Sundays & Holidays) 8:58pm	Train 145 (Saturdays) 9:48pm	Train 171 (Weekdays) 9:55pm	Train 147 (Sundays & Holidays) 9:33pm	Train 145 (Saturdays) 9:53pm	Train 171 (Weekdays) 10:00pm

Table 2: Approximate arrival times and departure times. (Arrival times are westbound trains and departure times are eastbound trains.)

	Proposed Roanoke Expansion	Incremental Increase with Bedford	Proposed Roanoke Expansion with Bedford
Total Revenue	\$4,785,000	\$242,000	\$5,027,000
Total Expenses (Loss)	(\$2,018,000)	(\$32,300)	(\$2,050,300)
NEC Revenue Contribution (Loss)	\$358,000	(\$39,500)	\$318,500
State Operating Payment via Revenue (Credit)	\$3,125,000	\$170,200	\$3,295,200

Table 3: Proposed Roanoke Service Expansion Financial Analysis

### Financial Analysis

Amtrak Route 46 is a state supported route, and Virginia is required to pay a share of the operating costs. By adding a station in Bedford, there would be an approximate increase of \$32,300 in expenses associated with the route, as well as an additional \$39,500 Northeast Corridor (NEC) through-revenue contribution. The Amtrak Route 46 is a base-increment extension of trains from their Northeast Corridor. Per federal requirements (PRIIA 209), adding a station in Bedford would decrease the NEC through-revenue credit for Virginia due to the increased NEC passenger miles charge. However, there would be an approximate increase of \$242,000 in total revenue (approximately \$232,000 in additional ticket revenue and approximately \$8,000 in additional food and beverage revenues). But unfortunately due to the increased expenses and NEC through-revenue loss, adding a station stop in Bedford would only reduce Virginia's state payment to Amtrak by approximately \$170,200.

## 5. STATION AND PLATFORM NEEDS ASSESSMENT

To develop an order of magnitude estimate, two station assessments were conducted to study the infrastructure needs and track improvement that would be required at the locally preferred station site. These estimates use the locally preferred station alternative provided by the Town of Bedford as a baseline to estimate cost. The locally preferred site has not been evaluated or approved by DRPT or Norfolk Southern and, as such, evaluating this site provided a broad cost overview for establishing a platform and station.

The station assessment conducted would meet the standard 1,000-foot requirement for passenger rail platforms required by Amtrak. Two platform options were evaluated – a high level platform and a low level platform. As per the safety standards of Norfolk Southern and other Class I railroads, high level platforms are not allowed on the main line. Therefore, the cost of the high level platform includes the construction of a 1,300 foot passenger siding.

A low level platform is permitted on the main line; however these platforms require more accommodations

to comply with ADA standards, and is not the preferred option according to FRA platform requirements for ADA access. The FRA requires that new or altered intercity passenger rail platforms meet current ADA standards including level entry either through high level platforms, station-based lifts or mini-high platforms. Meeting these ADA requirements with a low level platform would require establishing one of these alternatives. Amtrak and DRPT also discourage low level and mini-platforms and encourage the construction of high level platforms at passenger rail stations.

Federal requirements for these standards can be found in Title 49 of the Code of Federal Regulations in Parts 37 (Transportation Services for Individuals with Disabilities (ADA)) and 38 (Americans with Disabilities Act (ADA) Accessibility Specification for Transportation Vehicles). The electronic version of these regulations can be found using the following links:

- ▶ 49 CFR Part 37
- ▶ 49 CFR Part 38

The platform configuration used to generate the order of magnitude estimates for both a high level and low level platform are shown below in figures 11 and 12. Both platform designs exceed the parcel that was selected as the locally preferred alternative. For the selected site to host a station, the Town of Bedford would have to acquire the adjacent property for the station.

The locally preferred site has several constraints that could be problematic for establishing a passenger rail station and increase the platform, infrastructure and station costs. These include:

- ▶ Extensive utility infrastructure relocation;
- ▶ Proposing a platform on the Norfolk Southern main line; and
- ▶ Acquisition of adjacent property to meet 1,000 foot platform length

### Utility Infrastructure

The tracks to the south of the locally preferred alternative contain an extensive network of utility infrastructure. As

part of the high level platform option, the southern portion of the proposed passenger track could potentially be in conflict with the existing power substation and power lines and could require costly utility relocations. An existing water line runs underneath the existing railroad tracks that could potentially be in conflict with the platform foundation construction. This station location would require a potentially expensive process for the relocation of this infrastructure network, including overhead powerlines and waterline infrastructure.

### Platform on Main Line

The locally preferred site is situated on the Norfolk Southern Main Line, which poses specific problems with design and requires approval for an easement by Norfolk Southern. Norfolk Southern, as with all Class 1 carriers, does not allow high level platforms to be located on the main line, therefore a dedicated passenger siding is required for a high level platform option. To meet the Federal Rail Administration's (FRA) preferred ADA station

design, DRPT anticipates new passenger rail service will require a high level platform. This would preclude the preferred station site from meeting both standards – a high level platform off the main line – without building an additional siding track. There is an existing passing siding and an industrial siding on the north side of the track. If a rail stop was provided in Bedford, Norfolk Southern may require the platforms be located off the industrial siding track.

### Platform Length and Adjacent Property

The Amtrak station platform standard for the Northeast Regional corridor states that 1,000 feet of platform is needed for stations along the route. It is possible that Amtrak would allow for a shorter platform, however, an 850 foot platform would be the absolute minimum allowed for a new Amtrak station. Both an 850 foot and 1,000 foot station design would require the Town of Bedford to acquire the property to the east of the proposed site. This site is currently occupied by a privately owned business.



Figure 9: View looking east from locally preferred station site on the south side of the tracks



Figure 10: View looking west from locally preferred station site on the south side of the tracks

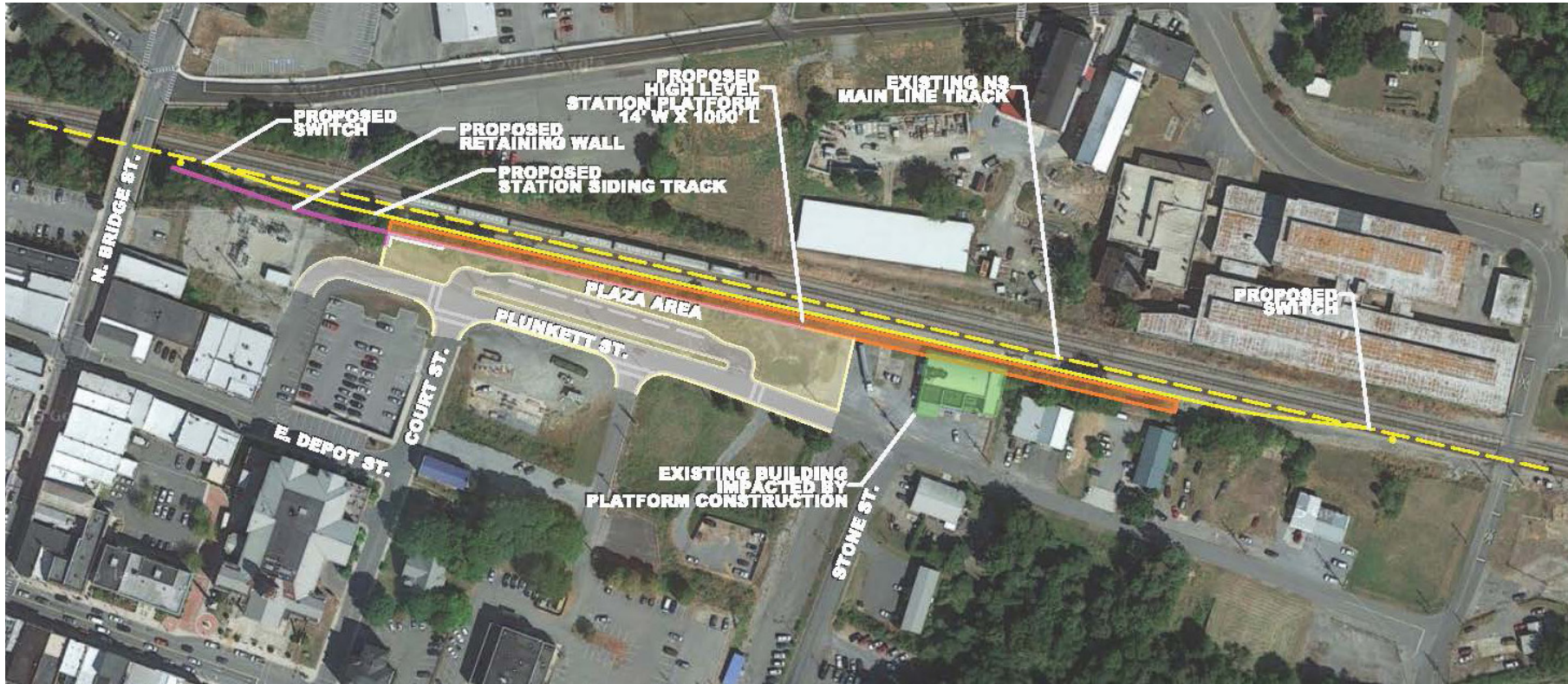


Figure 11: Rendering of 1000 foot high level platform (Town of Bedford's Locally Preferred Site)



Figure 12: Rendering of 1000 foot low level platform (Town of Bedford's Locally Preferred Site)

## 6. SERVICE AND CAPITAL COSTS ESTIMATE

Using the site locally preferred by the Town of Bedford as a baseline for generating an order of magnitude cost study, an estimated cost range for both a high level 1,000 foot platform and a low level 1,000 foot platform were generated. The low end and high end of the cost ranges for a high level platform station and a low level platform station are provided by each infrastructural component as well as a total cost.

Cost estimates are based on Standard Cost Categories (SCC) for capital projects set by the Federal Rail Administration (FRA) and Federal Transit Administration (FTA). The estimate includes a 35 percent allocated contingency in each category and a 10 percent unallocated cost contingency. The cost per unit in the SCC breakdown is presented in Appendix B.

Including the low end range, high end range and mid-point costs, Table 5 presents a comparative cost estimate for the high level and low level platform options. Appendix A provides a detailed cost breakdown for both a high level and low level platform.

To develop the capital infrastructure cost estimate at the site preferred by the Town of Bedford, project engineers identified the infrastructure components that would be required to establish both a high level and low level platform. These components included infrastructure such as track, station platform and utilities relocation. To develop the order of magnitude cost estimate, unit costs for the major components were constructed based on similar passenger rail platform projects. Projects studied for cost comparison include:

- ▶ Passenger Track and Platform Improvements in Roanoke, VA

- ▶ Recent Norfolk Southern Railroad trackwork projects throughout the region
- ▶ Second Platform projects in Salisbury and Kannapolis, North Carolina
- ▶ Similar Station Platform projects in rural Illinois

The cost were computed for each major item and summarized using the FRA and FTA Standard Cost Categories (SCC) as well as an allocated contingency of 25% for each major item and an Unallocated Contingency (SCC 90) of 10% on the project cost subtotal. An estimate for the cost of professional services (SCC 80) was generated using the TCRP Report 138, Estimating Soft Costs for Major Public Transportation Fixed Guideway Projects. The lower range of professional services cost was used due to the relatively small scale of the Bedford project. The total project cost range was developed by deducting 10% and adding 15% to the total project cost for each platform option.

To fine-tune the SCC unit cost and provide a point of comparison, the project team compared the cost estimates of the platform and canopy infrastructure for rural passenger rail stations. It is important to note that all five of these stations had existing stops and these projects simply upgraded the platform, canopy and station utilities infrastructure (such as lighting). These sites did not require track work infrastructure since they were already serving as active intercity passenger rail stops. These existing low level stops have also been allowed to maintain shorter platforms and less canopy cover than is required for newly established passenger rail stops. These stations in rural North Carolina and Illinois are presented in Table 4 with site pictures.





					
	<b>Kannapolis, NC Station NCDOT Rail Second Platform</b>	<b>Salisbury, NC Station NCDOT Rail Second Platform</b>	<b>Dwight, IL Station Chicago to St. Louis Corridor (Rural Station) Second Platform</b>	<b>Alton, IL Station Chicago to St. Louis Corridor (Rural Station) Second Platform</b>	<b>Normal, IL Station Chicago to St. Louis Corridor (Rural Station) Second Platform</b>
<b>Cost</b>	\$7M – includes utilities	\$10M – includes utilities	\$1.5M	\$1.7M	\$1.8M
<b>Underpass Length</b>	100'	150'			
<b>Grading</b>		Yes			
<b>Platform</b>	400' platform (low-level)	600' platform (low-level)	500' platform (low-level)	500' platform (low-level)	460' platform (low-level)
<b>Canopy</b>	Yes	Yes	Yes (22')	Yes (22')	Yes (460')

Table 4: Cost comparison of other station improvements



	High Level Option		Low Level Platform		Low Level Option	High Level Option
	Low End of Range	High End of Range	Low End of Range	High End of Range		
Trackwork	\$1,000,000	\$1,200,000	\$0	\$0	\$0	\$1,010,000
Station Platform	\$5,900,000	\$7,500,000	\$4,300,000	\$5,500,000	\$4,710,000	\$6,460,000
Sitework/Civil and Utilities	\$1,000,000	\$1,200,000	\$800,000	\$900,000	\$780,000	\$1,040,000
Railroad Systems	\$200,000	\$200,000	\$200,000	\$200,000	\$130,000	\$130,000
Real Estate	\$200,000	\$300,000	\$0	\$0	\$0	\$190,000
<b>SUBTOTAL</b>	<b>\$8,000,000</b>	<b>\$10,200,000</b>	<b>\$5,100,000</b>	<b>\$6,500,000</b>	<b>\$5,620,000</b>	<b>\$8,830,000</b>
Unallocated Contingency	\$1,000,000	\$1,200,000	\$600,000	\$800,000	\$645,150	\$1,013,150
<b>TOTAL</b>	<b>\$9,000,000</b>	<b>\$11,400,000</b>	<b>\$5,700,000</b>	<b>\$7,300,000</b>	<b>\$6,300,000</b>	<b>\$9,900,000</b>

Table 5: Cost comparison of high level and low level platforms. (Cost range of high level and low level platform options and mid-range cost point are presented.)

The new station in Roanoke was also examined as an in-state comparison for a newly established passenger rail stop. It should be noted for the Roanoke comparison that some of the cost for the station included design upgrades that were paid for by the City of Roanoke. Those upgrades were parsed out for the cost comparison. The Roanoke station required some additional and more extensive track work than would be expected for most rural intercity passenger rail stations.

As such, the SCC unit cost estimate utilized in this estimate is situated between the sub-minimal platform lengths of the replacement stations and the upgraded and complex project at Roanoke. The Bedford cost comparison generated here is consistent with other passenger rail stations estimates on NS rail line throughout the region.

## 7. POTENTIAL FUNDING SOURCES FOR PASSENGER RAIL SERVICE

Introducing a new passenger rail station typically requires multiple sources of funding throughout the lifecycle of the project. In the early phases, funding is required to conduct multiple pre-construction activities required to advance the project into construction and operations. Feasibility studies and environmental analysis are often required for a station project to be eligible for state and federal passenger rail funding programs and are usually funded through local or state budgets. A description of likely available funding sources for establishing passenger rail service and a new passenger rail station is provided to the right.



Figure 13: Funding options for establishing passenger rail station.

- ▶ **Federal funding:** FRA supports passenger and freight railroading through a variety of competitive grant, dedicated grant, and loan programs to develop safety improvements, relieve congestion, and encourage the expansion and upgrade of passenger and freight rail infrastructure and services. This includes competitive discretionary grant programs and dedicated grant programs like the Transportation Investment Generating Economic Recovery (TIGER) grant program and the Federal Railroad Administration's High Speed Intercity Passenger Rail (HSIPR) program. The likelihood of program success in competing for TIGER and FRA grant funding would depend on the project's ability to meet qualification and eligibility requirements.
- ▶ **State funding:** The primary anticipated state funding source is Virginia's Intercity Passenger Rail Operating and Capital Program (IPROC). Established in 2011 and funded in 2013, DRPT administers this fund and invests state funds in projects that grow and enhance intercity passenger rail service in the Commonwealth. The program is open for railroads, municipalities, local businesses and other entities to seek funds for projects that advance the vision and goals of the IPROC fund. The Commonwealth Transportation Board determines if project are for the common good of a particular region or the Commonwealth as a whole.
- ▶ **Regional and local funding:** Local governments in the Bedford region may explore new and existing revenue streams to support station development. This may provide a share of funding for the platform. Based on DRPT's past projects, construction of a station building would be the responsibility of the locality, while the state may provide assistance in track infrastructure and platform construction.
- ▶ **Public-private funding:** Partnerships between public and private entities are often sources for new transportation infrastructure and services. This may include funding sources such as tax increment financing (TIF), special districts, developer contributions, or joint development. While TIFs rely on growth in assessed real property values of parcels comprising the district, special districts assess an additional fee or property tax rates to fund special services. Developer contributions are payments negotiated between a developer and local government that are dedicated to a special purpose, often in exchange for greater density or other development benefits. Joint development provides a stream of revenues for development on land initially acquired for transit improvements; the revenue potential varies depending on market conditions.
- ▶ **Operating revenue:** This source includes non-fare operating funding including revenue from advertising, concessions, rentals, parking, and charter service, to the extent that each of these funding sources are reasonably expected to contribute to project funding.
- ▶ **Innovative financing:** While the funding sources summarized above bring new funds to the table, financing can help to manage cash flows to the station project. This could include conventional bond financing, direct federal loans from the Transportation Infrastructure Finance and Innovation Act (TIFIA) program, the Railroad Rehabilitation and Improvement Financing (RRIF) program, or short-term borrowing. Financing may also be coupled with a public-private partnership arranged to deliver a portion of the project or complementary development.

Available State and Federal Funding Programs			
Funding Program	Administered By	Program Description	Eligible Projects
Intercity Passenger Rail Operating and Capital Fund (IPROC)	DRPT	The IPROC Fund provides operational funds to sustain Virginia's share of Amtrak Virginia's operating budget. This Fund helps fund future needs to maintain and develop new and expanded intercity passenger rail operations.	New and expanded intercity passenger rail projects.
Rail Enhancement Fund (REF)	DRPT	The REF is a capital infrastructure program based on a public benefit analysis and requires a minimum 30 percent match from non-state sources. It does not provide for subsidizing passenger rail operations but is meant to support passenger and freight rail capital improvements.	Capital improvements benefiting passenger and freight initiatives.
Intercity Passenger Rail Service Corridor Capital Assistance Program	USDOT	This program provides funding assistance to states, groups of states, interstate compacts, public agencies, and Amtrak. The program authorizes the U.S. DOT to use appropriated funds to issue grants to assist in financing the costs of the facilities, infrastructure, and equipment necessary to provide or improve intercity rail transportation. States or groups of states, interstate compacts, and public intercity passenger rail agencies established by states are eligible for these grants. To be eligible for program funding, projects must be included in an approved state rail plan.	Service development programs and planning projects, infrastructure, and equipment for new or improved intercity passenger rail programs.
Transportation Investment Generating Economic Recovery (TIGER)	USDOT	This is a competitive, discretionary grant program supporting investments in critical road, rail, transit and port projects across the nation. Projects selection is based on a rigorous merit-based process to select projects that offer specific benefits and can be delivered faster and save on construction costs. TIGER can provide capital funding directly to any public entity, including municipalities, counties, port authorities, tribal governments, MPOs, or other entities.	Multi-modal, multi-jurisdictional capital projects.

Table 6: Available funding programs for establishing a passenger rail station

## 8. PROCESS FOR ESTABLISHING PASSENGER RAIL SERVICE IN VIRGINIA

The process chart below identifies a high-level conceptual flow chart inclusive of milestones and stakeholder responsibilities as guidance to implement a new passenger rail station. As previously stated, DRPT has stated that two years of ridership data is required before any changes are considered to Route 46 beyond the planned expansion to Roanoke.

The process described here process is divided into three phases: pre-construction activities, construction activities, and revenue activities, and includes four key stakeholders: DRPT as the state sponsor of service; Norfolk Southern (NS) as the host railroad; Amtrak as the operator of the existing service; and Bedford as the local government responsible for the community served by the station. The activities listed in bold indicate primary task and responsible stakeholder.

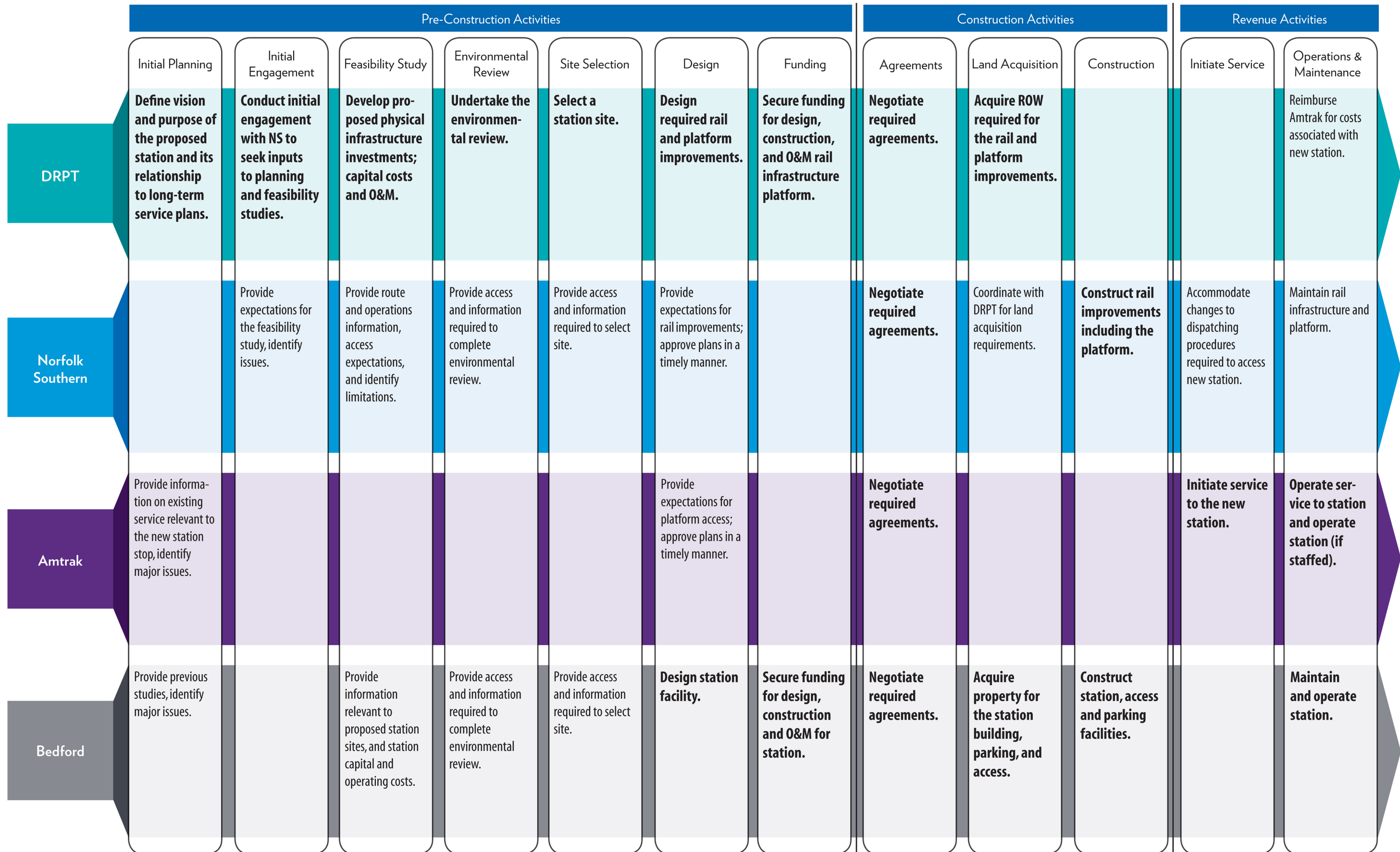


Figure 14: Roles of stakeholder entities in the process of expanding passenger rail roles

## Pre-Construction Activities

Pre-construction activities include all milestones required to enter into the construction phase. It is important to note that while described sequentially, the activities performed to complete the environmental review, site selection and design processes inform each other, and often occur simultaneously and iteratively.

### Initial Planning

The first step in introducing a new passenger rail station in Bedford is to conduct initial planning and preparation by becoming familiar with the Bedford region and its relationship to the larger rail operations network. DRPT is responsible for the initial planning and Amtrak and Bedford play a supporting role by providing key information to DRPT.

### Initial Engagement

DRPT is responsible for making initial engagement with NS to seek the host railroad's inputs to planning and feasibility studies. Initial engagement includes acquainting NS with DRPT's initial plans, requesting NS' cooperation with the feasibility study, and identifying major concerns.

### Feasibility Study

After the initial contact with NS, DRPT completes a feasibility study, the subject of this report. The feasibility study builds on all previous relevant studies performed to date, and, at a minimum, analyzes the ridership and revenue impacts resulting from the station. The study collects existing route and operations information, develops proposed physical infrastructure investments required, and develops high-level capital, operations, and maintenance (O&M) costs for track, platform and station facilities. DRPT is responsible for conducting the feasibility study, while NS, Amtrak and Bedford provide supporting information as required to complete the study.

### Environmental Analysis

Depending on the ultimate source of funding for the new passenger rail station, some degree of environmental analysis is required prior to the construction phase of the Bedford station. If the project is to be supported by federal funds, DRPT and the US Department of Transportation (USDOT) must comply with the National Environmental Policy Act (NEPA). If the station is funded primarily through state and local sources, DRPT or the DRPT grantee will apply state environmental policies and will follow local permitting processes. DRPT is responsible for ensuring the applicable environmental analysis while NS and Bedford provide the necessary information and access to the station site and rail corridor required to complete an environmental analysis.

## Site Selection

The site selection process is led by DRPT, but conducted in close coordination with the NS and Bedford.

### Design

The design work for a new station can be divided into two general areas with two corresponding responsible parties: the station platform and track work required for trains to access the station, which is the responsibility of DRPT, and the design of the station building, access to the platform from the station, access to the station from the local community, and parking, which is the responsibility of Bedford. Design of all required rail infrastructure by DRPT is conducted in close coordination with NS and Amtrak. Coordination with NS is critical to understand how the train will access the station and coordination with Amtrak ensures the platform is designed in accordance with Americans with Disabilities Act (ADA) requirements and other operator specifications. Bedford is responsible for the design of the station building and access to the station and performs this work in close coordination with DRPT and Amtrak.

### Secure Sources of Funding

It is common for various sources of funding to be applied to a station project throughout the duration of the planning, design and construction process, but a station project cannot advance into the construction phase until all sources of funding for the construction and ongoing O&M of the station have been secured. DRPT is responsible for securing funding for the design, construction and O&M costs associated with the railroad infrastructure to include the passenger platform. Bedford is responsible for securing funding for the design, construction and O&M costs associated with the passenger station, parking and access to station.

## Construction Activities

Once funding is secured and the environmental analysis is complete, the station project moves into the construction phase.

### Negotiate Agreements

A number of agreements between DRPT, Amtrak, NS and Bedford are required to move the station project into the construction phase and govern the access, liability, construction and on-going O&M for the station. Typically, DRPT enters into separate construction agreements with NS for the construction of the rail / platform and. DRPT and Amtrak will also amend the operating agreement with Amtrak to accommodate the service. Amtrak makes modifications to their existing agreement with the NS. Bedford may enter into on-going operations and

maintenance lease agreement with Amtrak and any other tenants of the new station to include properly assigning liability and tenant / landlord responsibilities.

### Land Acquisition

DRPT, NS and Bedford acquire the property required for the station in accordance with the agreements described above. Land acquisition occurs in accordance with all applicable federal, state and local laws such as the Uniform Act.

### Construction

NS, through a construction agreement with DRPT, is responsible for construction activity within the railroad right-of-way (ROW) to include track, signal and platform construction. Bedford is responsible for the construction of the station building, access to the station and parking.

### Revenue Activities

Once the station has entered into revenue operations, the on-going operations and maintenance of the station and platform is governed by the agreements between DRPT, the host railroad, Amtrak and the local government.

### Initiate Service

Once the station is complete, Amtrak is responsible for initiating service to the station with both DRPT and the host railroad.

### Operations and Maintenance

NS is responsible for the dispatching of trains to the station and the maintenance of the station facilities within the railroad's ROW. Bedford is responsible for the on-going operations and maintenance of the station building, access to the platform from the station (to include any devices or lifts required to accommodate ADA requirements) and access to the station from the local community. If the station is staffed, Amtrak is responsible for this function.

## SUMMARY OF FINDINGS

This order of magnitude study examined the cost and infrastructure needs associated with establishing passenger rail service in Town of Bedford, VA. Additionally it identified funding sources for a potential intercity passenger rail stop in the Town of Bedford and outlined the process for establishing new passenger rail service. The findings are as follows:

- ▶ The cost of a high level platform at the site ranges from \$9 million to \$11.4 million. A low level would cost between \$5.7 million and \$7.3 million. The mid-point range for a high level platform on the site is \$9.9 million; the low level platform mid-range cost is \$6.3 million.
- ▶ If a high level platform is selected, a passenger rail siding of approximately 1,300 feet in length is required. If a main line, low level platform is selected, it would not require the additional rail siding, however a low level platform presents ADA challenges which may have design solutions with cost implications.
- ▶ If Norfolk Southern agreed to study Bedford as a stop for passenger rail, a Capital Infrastructure Study would be required to assess the capital investment needed to maintain freight rail capacity. This study would lay out the infrastructure upgrades that the host railroad would require before granting a passenger easement (see Appendix C: NS Passenger Policy).
- ▶ The local preferred station site selected by the Town of Bedford study could potentially require relocating underground utility infrastructure.
- ▶ A Bedford, VA passenger rail stop is estimated to add an additional 2,800 riders per year to the Amtrak Route 46/Northeast Corridor. That would be approximately 117 roundtrips per month or 4 roundtrips per day. Additionally, the stop would decrease Virginia's Amtrak Operating payment by approximately \$170,000 annually.
- ▶ Potential funding sources for the capital investment in infrastructure include federal transportation grants (such as USDOT TIGER, FRA HSIPR); state funding, local funding and public-private partnerships.

As stated previously, it is DRPT's position that two years of ridership data is necessary on the expanded route to Roanoke before any changes would be considered to Route 46 service.

## APPENDICES

- ▶ **Appendix A:** Detailed Cost Estimates for Low Level and High Level Platforms
- ▶ **Appendix B:** Unit Cost Using Standard Cost Categories (SCC) and Federal Rail Administration Guidance
- ▶ **Appendix C:** General Principles Guiding Norfolk Sothern's Evaluation of Intercity Passenger and Commuter Passenger Rail Proposals
- ▶ **Appendix D:** Norfolk Southern 2005 Policy Statement

Appendix A: Detailed Cost Estimates for High Level and Low Level Platforms

## High Level Platform

FRA/FTA SCC Categories		Unit Cost	Unit	Quantity	Total
<b>10 Guideway &amp; Track Elements</b>					
10.01 Guideway: At-grade exclusive right-of-way	Ballasted Track	\$310.00	TF	1300	\$403,000
	SUBTOTAL				\$403,000
	Allocated contingency (25%)				\$100,750
	TOTAL				\$503,750
10.08 Guideway: Retained cut or fill	Retaining Wall	\$100.00	SF	3500	\$350,000
	SUBTOTAL				\$350,000
	Allocated contingency (25%)				\$87,500
	TOTAL				\$437,500
10.12 Track: Special (switches, turnouts)	No. 10 Turnout	\$200,000.00	EA	2	\$400,000
	SUBTOTAL				\$400,000
	Allocated contingency (25%)				\$100,000
	TOTAL				\$500,000
<b>20 Stations, Stops, Terminals, Intermodal</b>					
20.01 At-grade station, stop, shelter, mall, terminal, platform	High Level Platform	\$200.00	SF	14000	\$2,800,000
	Station Canopies	\$1,960.00	LF	670	\$1,313,200
	Station Amenities	\$15.00	LF	1000	\$15,000
	Station System Utilities	\$630.00	LF	1000	\$630,000
	Station Lighting	\$300.00	LF	1000	\$300,000
	Station Fencing	\$105.00	LF	1000	\$105,000
	SUBTOTAL				\$5,163,200
	Allocated contingency (25%)				\$1,290,800
	TOTAL				\$6,454,000
<b>40 Sitework &amp; Special Conditions</b>					
40.01 Demolition, Clearing, Earthwork	Unclassified Excavation	\$25.00	CY	1200	\$30,000
	Borrow Excavation	\$30.00	CY	1800	\$54,000
	Structural Fill - Aggregate	\$30.00	TN	2240	\$67,200
	Erosion and Sediment Control	\$25,000.00	LS	1	\$25,000
	Building Demolition	\$15.00	SF	7000	\$105,000
	SUBTOTAL				\$281,200
	Allocated contingency (25%)				\$70,300
	TOTAL				\$351,500
40.02 Utilities	Utility Relocation	\$100,000.00	LS	1	\$100,000
	Storm Drainage	\$45.00	LF	1100	\$49,500
	SUBTOTAL				\$149,500
	Allocated contingency (25%)				\$37,375
	TOTAL				\$186,875



FRA/FTA SCC Categories		Unit Cost	Unit	Quantity	Total
40.08 Temporary Conditions	Railroad Flagging	\$50,000.00	LS	1	\$50,000
	Allocated contingency (25%)				\$12,500
	<b>TOTAL</b>				<b>\$62,500</b>
<b>50 Systems</b>					
50.01 Train Control and signals	Railroad Signal Modifications	\$50,000.00	EA	1	\$50,000
	Allocated contingency (25%)				\$12,500
	<b>TOTAL</b>				<b>\$62,500</b>
50.05 Communications	Railroad Communications Modifications	\$50,000.00	LS	1	\$50,000
	Allocated contingency (25%)				\$12,500
	<b>TOTAL</b>				<b>\$62,500</b>
<b>SCC 10-50 SUBTOTAL</b>					<b>\$8,221,125</b>
<b>60 Right-of-Way</b>					
60.01 Purchase or Lease of Real Estate	Property Acquisition	\$5.00	SF	26,592	\$132,960
	Allocated contingency (25%)				\$33,240
	<b>TOTAL</b>				<b>\$166,200</b>
60.02 Relocations	Relocations - 10% of 60.01 Subtotal				\$16,620
	Allocated contingency (25%)				\$4,155
	<b>TOTAL</b>				<b>\$20,775</b>
<b>SUBTOTAL</b>					<b>\$8,810,000</b>
<b>80 Professional Services</b>					<b>\$1,321,500</b>
<b>90 Unallocated Contingency</b>					<b>\$1,013,150</b>
<b>TOTAL</b>					<b>\$9,900,000</b>

## Low Level Platform

FRA/FTA SCC Categories		Unit Cost	Unit	Quantity	Total
<b>10 Guideway &amp; Track Elements</b>					
10.01 Guideway: At-grade exclusive right-of-way	Ballasted Track	\$310.00	TF	0	\$0
	SUBTOTAL				\$0
	Allocated contingency (25%)				\$0
	TOTAL				\$0
10.08 Guideway: Retained cut or fill	Retaining Wall	\$100.00	SF	2600	\$260,000
	SUBTOTAL				\$260,000
	Allocated contingency (25%)				\$65,000
	TOTAL				\$325,000
10.12 Track: Special (switches, turnouts)		\$200,000.00	EA	0	\$0
	SUBTOTAL				\$0
	Allocated contingency (25%)				\$0
	TOTAL				\$0
<b>20 Stations, Stops, Terminals, Intermodal</b>					
20.01 At-grade station, stop, shelter, mall, terminal, platform	Low Level Platform	\$100.00	SF	14000	\$1,400,000
	Station Canopies	\$1,960.00	LF	670	\$1,313,200
	Station Amenities	\$15.00	LF	1000	\$15,000
	Station System Utilities	\$630.00	LF	1000	\$630,000
	Station Lighting	\$300.00	LF	1000	\$300,000
	Station Fencing	\$105.00	LF	1000	\$105,000
	SUBTOTAL				\$3,763,200
	Allocated contingency (25%)				\$940,800
	TOTAL				\$4,704,000
<b>40 Sitework &amp; Special Conditions</b>					
40.01 Demolition, Clearing, Earthwork	Unclassified Excavation	\$25.00	CY	1000	\$25,000
	Borrow Excavation	\$30.00	CY	1500	\$45,000
	Structural Fill - Aggregate	\$30.00	TN	2240	\$67,200
	Erosion and Sediment Control	\$25,000.00	LS	1	\$25,000
	SUBTOTAL				\$162,200
	Allocated contingency (25%)				\$40,550
	TOTAL				\$202,750
40.02 Utilities	Utility Relocation	\$100,000.00	LS	1	\$100,000
	Storm Drainage	\$45.00	LF	1100	\$49,500
	SUBTOTAL				\$149,500
	Allocated contingency (25%)				\$37,375
	TOTAL				\$186,875

FRA/FTA SCC Categories		Unit Cost	Unit	Quantity	Total
40.08 Temporary Conditions	Railroad Flagging	\$50,000.00	LS	1	\$50,000
	Allocated contingency (25%)				\$12,500
	<b>TOTAL</b>				<b>\$62,500</b>
<b>50 Systems</b>					
50.01 Train Control and signals	Railroad Signal Modifications	\$50,000.00	LS	1	\$50,000
	Allocated contingency (25%)				\$12,500
	<b>TOTAL</b>				<b>\$62,500</b>
50.05 Communications	Railroad Communications Modifications	\$50,000.00	LS	1	\$50,000
	Allocated contingency (25%)				\$12,500
	<b>TOTAL</b>				<b>\$62,500</b>
<b>SCC 10-50 SUBTOTAL</b>					<b>\$5,610,000</b>
<b>60 Right-of-Way</b>					
60.01 Purchase or Lease of Real Estate	Property Acquisition	\$5.00	SF	0	\$0
	Allocated contingency (25%)				\$0
	<b>TOTAL</b>				<b>\$0</b>
60.02 Relocations	Relocations - 10% of 60.01 Subtotal				\$0
	Allocated contingency (25%)				\$0
	<b>TOTAL</b>				<b>\$0</b>
<b>SUBTOTAL</b>					<b>\$5,610,000</b>
<b>80 Professional Services</b>					<b>\$841,500</b>
<b>90 Unallocated Contingency</b>					<b>\$645,150</b>
<b>TOTAL</b>					<b>\$6,300,000</b>

**Appendix B:** Unit Cost Using Standard Cost Categories (SCC) and Federal Rail Administration Guidance

SCC	Item Description	Cost
10.01 Ballasted Track	Ballasted Track Unit Cost, TF	\$310.00
10.08 Retaining Walls	Retaining Wall, SF	\$100.00
10.12 Turnouts	No. 10 Turnout, EA	\$200,000.00
	High Level Platform, SF	\$200.00
	Low Level Platform, SF	\$100.00
	Station Canopies, LF	\$1,960.00
20.01 Stations	Station Amenities, LF	\$15.00
	Station System Utilities, LF	\$630.00
	Station Lighting, LF	\$300.00
	Station Fencing, LF	\$105.00
40.01 Earthwork	Unclassified Excavation, CY	\$25.00
	Borrow Excavation, CY	\$30.00
	Structural Fill - Aggregate, TN	\$30.00
	Erosion and Sediment Control, LS	\$25,000.00
	Building Demolition, SF	\$15.00
40.02 Utilities	Utility Relocations, LS	\$100,000.00
	Drainage, LF	\$45.00
40.08 Temporary	RR Flagging, LS	\$50,000.00
50.01 Train Control	RR Signaling Modifications, LS	\$50,000.00
50.05 Communications	RR Communication Modifications, LS	\$50,000.00
60.01 Right-of-Way	Property Acquisition, SF	\$5.00

**Appendix C:** General Principles Guiding Norfolk Southern's Evaluation of Intercity Passenger and Commuter Passenger Rail Proposals

**GENERAL PRINCIPLES GUIDING  
NORFOLK SOUTHERN'S EVALUATION OF  
INTERCITY AND COMMUTER PASSENGER RAIL PROPOSALS**

The following principles are a guide for planners of intercity and commuter rail proposals when working with Norfolk Southern. Of course, each proposal necessarily is unique, and NS' application of the principles to particular proposals will often be unique as well.

Safety is our paramount concern. Design, maintenance practices, and operating patterns always will emphasize safety.

An operational feasibility study is necessary to fully understand all potential impacts.

- The proposed passenger operation must create “transparency” in the affected rail system. Transparency is the capacity for passenger trains and freight trains to operate without delay, however minimal, to each other, while still allowing for route maintenance.
  - Passenger projects are meant to be successful, so the study will focus on the proposal's full-build scenario versus any interim plan. Along the same lines, freight volumes will grow, so any study will anticipate future freight levels.
  - Freight operations are long distance and customer-driven, which precludes “passenger only” operating windows and temporal separation such as night-time-only freight operations.
  - Passenger projects might cause “network effects” on the NS system that are broader than the project area. Often, the studied geographic scope will have to be larger than the passenger project area in order to identify and address these effects.
  - Project costs associated with compliance with Federal Railroad Administration regulations are the responsibility of the project sponsor.
- The rail environment changes. Conditions attached to various forms of funding differ. Therefore, until funding is available, any passenger study is necessarily hypothetical.
  - A completed operational feasibility study by NS is a prerequisite to progress a project. NS will support only passenger project requests that have been fully studied and modeled.
  - As the transportation industry is dynamic, any proposal that does not secure funding cannot be shelved for future use – each proposal is unique, requiring its own up-to-date study.
  - Sometimes public funding comes with special conditions and requirements (including so-called “service outcome requirements”), which represent additional costs. Just as NS does not customarily agree to similar guarantees with our freight customers, the public sponsor will be responsible for any passenger guarantees.
  - It is possible that public funding may be taxable to Norfolk Southern, so the public sponsor must indemnify Norfolk Southern for any income taxes paid or incurred as a result of the receipt of public funding.

- NS will coordinate the operational feasibility study. The cost of the study (including NS' time) is the responsibility by the sponsoring public agency. For planning purposes, NS can estimate study costs in advance. Studies are detailed and specific and take a year, and often longer, to complete.

NS will receive fair compensation for use of its transportation corridors.

- NS' corridors consist of track and right-of-way that might, or might not, be fully utilized at any given time. As rail traffic flows change over time, this capacity, and the flexibility and potential it represents, is a key NS asset.
- Amtrak has certain statutory intercity passenger service access rights and therefore is not a good example to use in determining the fair and commercial price for use of NS assets.
- In determining a fair price for use of assets, NS will factor in any new equipment (including Positive Train Control) and costs, as well as additional property and other taxes, that would not be incurred absent passenger service.

New and expanded passenger operations require adequate liability protection.

- Passenger operators must compensate or indemnify NS for additional risk created by passenger projects, and any such indemnification needs to be backed up by an adequate level of insurance.
- Liability issues can create major hurdles. Often, sovereign immunity issues must be overcome. The cost to the passenger carrier for insurance and indemnification is substantial, as borne out by our experience with commuter authorities.

Special considerations are necessary for high speed rail service and corridors.

- Norfolk Southern is pleased to assist states planning for dedicated HSR and will work with planners to insulate those corridors from interference with and from NS freight corridors.
- Passenger trains operating in excess of 79 mph require their own dedicated tracks. Passenger trains operating in excess of 90 mph require their own private right-of-way.
- Where higher-speed trains share tracks with conventional freight trains, they will be able to reach 79 mph maximum. Where shared track is concerned, higher-speed trains must meet the same safety standards as conventional trains.

Special considerations are necessary for light rail service.

- Light rail service involves use of equipment that is not appropriate for use on NS tracks. Physical separation is required.
- Proposals for operating "non-compliant" passenger equipment (equipment that does not meet Federal Railway Administration standards) are not viable.
- Light-rail and non-compliant project sponsors should approach NS early in the process, and so that NS can advise if any of the project elements are compatible with freight trains and track.

(Policy dated May 2013)

Appendix D: Norfolk Southern Passenger Station Requirements (As Revised December 15, 2011)



**SUBJECT: Norfolk Southern Passenger Station Requirements**

In Norfolk Southern Railway Company's (NSR) policy statement dated June 15, 2005, Norfolk Southern set forth the conditions for permitting new or additional passenger rail service on our tracks. In that paper, NSR identified the principles intended to protect NSR-owned or dispatched rail lines and right of way. This policy stipulates that passenger operations must be "transparent" to our freight operations, and delay to freight trains by passenger trains, however minimal, is unacceptable. New services must pay fully allocated costs for access to the existing freight corridor, and there must be adequate liability protection as defined by NSR.

In the situation where a passenger/commuter service is proposed for sharing NSR tracks or Branch lines, a complete in-depth train capacity study must be undertaken at the expense of the passenger/commuter entity to assess passenger service impacts to the existing and future freight operations. Impacts to NSR freight business must be fully mitigated and that may involve constructing additional tracks, upgraded signal systems or other infrastructure improvements as specified by NSR.

In the situation where a passenger/commuter service is proposed for sharing only NSR ROW and not including NSR tracks, the adjacent passenger tracks must be separated by a minimum of 26 foot track centers to the NSR track and a barrier fence shall be installed between the two rail lines.

The NSR Standard platform clearance criteria for NSR territory for approved joint use tracks will be a low level platform located 5'-4" from centerline of track, and 0'-8" above top of rail.

Accordingly, any new passenger/commuter service using NSR tracks shall be limited to Gallery type passenger cars that are used by METRA (Chicago) and VRE (Washington, DC) that have on-board lift ramps to accommodate level board loading requirements established by the ADA.

NSR will only consider the use of High passenger platforms when the passenger/commuter service is prepared to construct dedicated station tracks.

In the event that proposed station parking lots and parking garages are located across the tracks from a station platform, overhead bridges or under grade tunnels will be required. Pedestrian crossing at grade will not be permitted. This

requirement is intended to ensure the maximum amount of safety for passengers and station patrons, especially along our busiest main line corridors.

In the event that the Federal government mandates station designs different than noted above, the passenger service will incur all costs to incorporate station infrastructure changes. NSR will expect that the freight operations, capacity, and maintenance obligations not be hindered due to such future mandates.

In the past, passenger facilities, including stations, were approved on a case-by-case basis, as we had no standard design criteria. In those instances, we provided guidelines, but made explicitly clear that NSR reserved the right to require more restrictive guidelines, as we deemed necessary. As requests for passenger service on our lines increase, we believe that it is practical to set forth our facility design requirements for constructing new passenger stations or to rehabilitate existing ones. In setting these standards, our paramount concern is safety, and we will not approve any design that increases risk to passengers and railroad employees, or subject NSR to additional liability exposure.

This memorandum is intended to outline our requirements for constructing new stations or rehabilitating existing ones on our lines.

### **Station Requirements**

The following requirements should be followed in designing stations:

- Stations should have dual track access with ingress and egress under or over the right-of-way. At-grade pedestrian crossings are not permitted.
- Full-length high-level platforms may only be placed adjacent to tracks used exclusively by passenger trains. **High platforms are not allowed adjacent to freight tracks.**
- Mini-high-level platforms may be constructed with the platform edge no closer than 8'-6" from the centerline of the adjacent track, if the track is shared with freight trains. Any considerations needed for gap reduction between the passenger car vestibule and platform edge shall be addressed with manually or mechanical means that does not reduce the minimum 8'-6" horizontal clearance requirement.

### **Single track -**

Single-track platforms may be permitted in single-track territory subject to the requirements set forth herein with the stipulation that, in the event that the line is double-tracked the passenger/commuter authority or station owner will bear the full cost of construction for dual track access.



**Multiple tracks** - Side Platforms:

1. Platforms will be adjacent to each outside main line.
2. Pedestrian designated walkways to crossing tracks must be ADA compliant overpass or underpass (ramp or elevator equipped).
3. Track side platforms shall **NOT** be located near public at-grade crossings as this may encourage passenger/commuter station patrons to cross tracks other than at the designated overpass or underpass.

**Center Track Fences** -

In the situation where underpass and/or overpass facilities are provided for approved dual track platforms and a patron trespass potential across the tracks is foreseen or occurs on a repeated bases, NSR will require the passenger service operators or stations owners to fund the installation and maintenance costs of center track fencing or other type of station fencing.

In the situation where the installation of any needed fencing including center track fences are required (at locations determined by NSR), any costs associated with altering track centers to better facilitate efficient movement of wide and standard sized freight car movements, shall be borne by the passenger/commuter operators or station owners.

**Multiple Tracks** - Center Platform:

1. Center track platforms may be workable provided that alternate footpaths are sealed off so that patrons only use the designated overpass or underpass access.

**Low Platforms** - General Guidelines

1. Dimensions for center, low platforms –
  - a. 22'-0" minimum width (track centers for tangent track would be 32'-8")
  - b. 26'-0" desirable width (track centers for tangent track would be 36'-8")
  - c. 32'-0" extremely desirable width (track centers for tangent track would be 42'-8")
2. Dimensions for side, low platforms –
  - a. 12'-0" minimum width
  - b. 16'-0" desirable width
3. Clearances for low platforms –
  - a. 5'-4" center of track to face of platform (minimum)
  - b. 0'-8" height of platform above top of rail (maximum)

### **Canopies –**

Gutterless canopies shall be used and shall slope away from track. Side clearance shall be 9'-0" (minimum) on tangent track.

### **Horizontal Clearance Adjustments –**

Adjustments to the minimum horizontal clearance will be made for any portion of the platform that is not located in tangent track. The adjustment for curvature shall be made as outlined below, and shall not be the larger measurement, but rather a cumulative adjustment;

1. Side clearance shall be increase 1-1/2" per degree of curvature in curved track.
2. At a height of 16'2" above top of rail, the side clearance shall be increased 3.5 inches per inch of super elevation where the cars lean into the canopy (canopy on inside of curve)

[End of Document]

Virginia Department of Rail & Public Transportation  
600 East Main Street, Suite 2102  
Richmond, VA 23219

Main: (804) 786-4440  
Fax: (804) 225-3752

[www.drpt.virginia.gov](http://www.drpt.virginia.gov)