

# CHAPTER 4 COSTS AND FUNDING

## 4.0 Introduction

This chapter provides a brief description of the cost to build, operate and maintain the Richmond/Hampton Roads Passenger Rail Project alternatives and discusses the financial sources by which DRPT may construct and operate the alternatives. This chapter also describes the federal, state and local funding options that could help fund the alternatives.

## 4.1 Financial Planning Methodology

Financial planning estimates the capital costs and the annual operating expenses and revenues from the base year to the design year. These estimates establish the level of financial resources that may be required for each year of the planning horizon.

The goal of financial planning is to develop an understanding of the financial aspects of the proposed action through an examination of funding sources and the allocation of those funds. Preparing a cash flow projection of the proposed action clarifies this understanding. The cash flow projection compares the income and expense potential of the following elements:

- Capital cost estimates;
- Operating and maintenance cost estimates;
- Fare revenue estimates; and
- Other sources of funds.

This analysis uses constant dollars (deflated dollars) to interpret the funding requirements. The financial analysis discusses and explores funding options that address capital and operating fund shortfalls discovered during an evaluation of the cash flow projections. More detailed financial analysis and cash flow projections will be required in the later stages of project development.

## 4.2 Background

### 4.2.1 The Virginia Department of Rail and Public Transportation (DRPT)

The Commonwealth of Virginia established DRPT in 1992. DRPT is a separate state agency from the Virginia Department of Transportation (VDOT). DRPT is the Commonwealth agency responsible for planning and funding freight and passenger rail improvements as well as non-rail modes of public transportation. The rail division of DRPT is responsible for supporting freight rail, passenger rail and fixed guideway transit systems including administration of the following programs:

- Coordination with Amtrak, Virginia Railway Express (VRE), and other agencies on passenger rail planning;
- Planning of high-speed intercity rail;
- Preparing and implementing the State Safety Oversight Program for rail and fixed guideway transit systems;
- Administration and management of the Rail Industrial Access Program, which is an economic development tool that provides funding for the construction of industrial rail sidings;
- Conducting rail feasibility analyses;
- Updating the state rail plan and needs assessments. The most recent plan was published in 2008;

- Coordination of safety and security plans and projects with the Washington Metropolitan Area Transit Authority (WMATA);
- Administration and management of the Rail Preservation Program, which provides for preservation and development of Virginia's shortline railroads;
- Conducting demand and rail capacity analyses for passenger rail studies; and
- Coordination of multimodal studies from the rail perspective and rail modeling;
- Administration and management of the Rail Enhancement Program, which provides for the enhancement of passenger and freight rail in Virginia.

#### 4.2.2 Currently Supported Rail Operations/Initiatives

To date, DRPT has not directly funded the operation of any passenger rail service. However, beginning in the Fall of 2009 DRPT will provide operational funding to support a three-year pilot program in two rail corridors: between Lynchburg and Washington, DC, and between Richmond and Washington, DC. DRPT also provides funding and other support to Virginia Railway Express (VRE), which is a commuter rail operation that serves Northern Virginia and the Metropolitan Washington, DC area.

DRPT is also involved in planning for future passenger rail service improvements in corridors that are or could be served by intercity passenger trains. Other passenger rail service initiatives in Virginia include the planning of the Southeast High-Speed Rail (SEHSR) project between Washington, DC and Charlotte, NC via Richmond and Petersburg. The following paragraphs describe DRPT rail programs:

**Virginia Railway Express (VRE)** - VRE provides commuter rail service on an 80-mile system along two corridors connecting the Northern Virginia suburbs with Washington, DC's Union Station. Amtrak owns the tracks near Union Station. The VRE route from Washington, DC to Manassas is operated over the Norfolk Southern Railway Company (NS) line and the route from Washington, DC to Fredericksburg is operated over a line owned by CSX Transportation (CSXT). Funding for VRE comes from a variety of sources including passenger fares and local funding. According to the 2008 Financial Statement<sup>43</sup>, operating revenues from fare receipts accounted for 23 percent of VRE's total revenues, while federal, state and local grants and subsidies accounted for the balance.

The Washington, DC to Fredericksburg VRE line in the I-95 corridor operates over the same rail line where DRPT is evaluating potential high-speed rail improvements. Accordingly, DRPT's management of investments by the Commonwealth in capital projects on this rail line will improve intercity passenger rail travel in the state by upgrading track, enhancing safety and increasing rail system capacity and reliability.

**Amtrak** - Amtrak operates over 20 trains daily through Virginia as part of its national passenger rail system. The number of daily trains will increase to 24 in late 2009. Amtrak currently provides seven daily round-trip trains between Washington, DC and Richmond with two daily round-trip trains between Richmond and Newport News, and Thruway connecting bus service from Newport News to Norfolk and Virginia Beach. These trains also serve the Williamsburg Amtrak station. Amtrak funds this service from passenger fares and annual appropriations from Congress. The Commonwealth of Virginia currently does not subsidize the operation of any of the existing Amtrak services within the state but is investing heavily in upgrading rail capacity between Washington, DC and Richmond, and will provide operational funding to support additional passenger rail service: between Lynchburg and Washington, DC, and between Richmond and Washington, DC.

**Washington, DC to Richmond High-Speed Rail** - DRPT has been active in evaluating ways to extend the high-quality, frequent passenger rail service experienced in the Northeast Corridor between Boston, MA and Washington, DC, southward to Richmond. Amtrak ownership of the associated rail infrastructure terminates in Washington, DC. An extension of high-speed rail service to Hampton Roads is federally designated as part of the SEHSR Corridor. The Commonwealth began to improve the Washington, DC to Richmond Corridor

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<sup>43</sup> Source: VRE website [http://www.vre.org/about/financial\\_statements.htm](http://www.vre.org/about/financial_statements.htm)

primarily by developing a plan to make capital improvements to the freight rail system (i.e., adding capacity, improving signaling and dispatching, etc.) over which the Amtrak trains operate. Initial improvements began with the “primary focus of reducing overall travel time while increasing the corridor’s capacity and reliability of passenger and freight service.”<sup>44</sup>

The purpose of the initial improvement projects is to prepare the corridor for higher speeds and eliminate bottlenecks that restrict the corridor’s capacity. Listed below are projects that are currently underway or planned within the next five years in the Washington, DC to Richmond Corridor<sup>45</sup>: The projects listed have either been approved or submitted for funding under the state’s Rail Enhancement Fund.

- **Southeast High-Speed Rail (Virginia – North Carolina Tier II EIS)** - DRPT and the Transportation Divisions of North Carolina, South Carolina, and Georgia have joined together to form a four-state coalition to plan, develop and implement the SEHSR corridor between Washington, DC and Atlanta, GA. Virginia and North Carolina have advanced environmental studies for the portion of the SEHSR project between Washington, DC and Raleigh, NC, completing a Tier I EIS for this portion in 2002. Infrastructure and capacity improvements are currently programmed or under way on the CSXT rail line for the portion of this corridor between Washington, DC and Richmond. These projects have independent utility apart from high-speed rail, and will also improve travel times and the overall reliability for both conventional and high-speed trains.

The SEHSR Tier II EIS (Richmond to Raleigh, NC) is evaluating route alternatives from Richmond through Petersburg to Raleigh, NC. The alternatives being considered in this document will allow connectivity to both the Peninsula/CSX and the Southside/NS routes of the Richmond/Hampton Roads Passenger Rail Project. This document will also evaluate potential station sites in the Petersburg area. The five sites being evaluated for highway access as part of the SEHSR Tier II EIS document include:

- 1) Southeast Petersburg where the CSXT A-line crosses the NS Beltline;
- 2) West Petersburg where the CSXT S-line crosses the CSXT A-line near Washington Street;
- 3) Northwest Petersburg at the current Ettrick Station;
- 4) Downtown Petersburg at the former Union Station; and
- 5) North Petersburg where the former CSXT S-line crossed the A-line near Dunlop.

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 arises from Norfolk Southern freight trains stopping and working at Poe Yard, the only other potential access to the Norfolk line.

- **I-81/Route 29 Passenger Rail** - In 1998, DRPT completed a series of studies designed to determine the feasibility of implementing new intercity passenger rail service in Southwest Virginia. The study proposed rail service that would connect Bristol with both Richmond and

<sup>44</sup> Source: Tobias, Alan and Tom Smithberger, PE. 2003. "Bringing Higher-Speed Passenger Rail to Virginia." *Rail Line*. Volume 13, Issue 1. November 2003.

<sup>45</sup> Source: DRPT List of Rail Enhancement Fund Applications. DRPT Website: <http://www.drpt.virginia.gov/projects/refapps.aspx>

Washington, DC. The Bristol service would connect 19 stations including Roanoke, Lynchburg, Charlottesville, Alexandria and points in between. Two round-trip trains per day would be operated. Trains would operate at conventional speeds (maximum 79 mph), but modern tilting trainsets would be used to allow trains to travel faster through curves. A total of \$9.4 million in improvements were identified, including the construction of four passing sidings, storage facilities in Richmond, Lynchburg and Bristol, station improvements, and a connection between the Norfolk Southern and CSXT rail lines in Richmond. In 2009, the Commonwealth Transportation Board authorized \$25.2 million for a three-year pilot program to fund new intercity passenger rail service in two rail corridors between Lynchburg and Washington, DC, and between Richmond and Washington, DC. The funding provides \$17.2 million for passenger rail operations through Amtrak for three years and \$8 million for railcars and equipment for the two trains.

- **Other Rail System Improvement Projects:** The projects listed in Table 4-1 have been submitted for funding under the Commonwealth's Rail Enhancement Fund for fiscal years 2010 – 2015.

**Table 4-1: Projects Submitted for Funding under the Rail Enhancement Fund**

Project	Project Description	Total Project Cost	Rail Enhancement Fund
I-95/I-64 Passenger Rail	Phase 2 of Crossroads/Hamilton third track improvements and Richmond area improvements on CSX main line.		
CSXT National Gateway	Eliminate clearance obstructions in Virginia for double stack freight trains.	\$2,899,000	\$2,029,300
CSXT Kilby Yard Improvements	As part of the National Gateway project, this yard will combine blocks of freight rail containers from four marine terminals in Virginia.	\$808,000	\$565,600
CSXT Virginia Avenue Tunnel	As part of the National Gateway project, this will add a second track and raise clearances for double stack trains.	\$134,309,000	\$24,001,100
I-81/Route 29 Passenger Rail - Nokesville to Calverton	Double tracking from Nokesville to Calverton on NS Crescent Corridor.	\$31,640,000	\$22,148,000
I-81 Crescent Corridor	Construct passing tracks at Berryville, Elkton, Bentonville and Stanley on NS main line.	\$33,890,000	\$23,723,000
I-81/Route 29 Passenger Rail	Capacity modeling and analysis for passenger rail service to Bristol, Roanoke, Lynchburg and Richmond.	01,000,000	0700,000
I-81/Route 29 Passenger Rail - NS Alexandria – Manassas	Upgrades track to Class 4 standards to support VRE commuter and Amtrak intercity passenger rail services.	\$7,324,717	\$5,127,302
Port of Richmond	Deepwater Terminal Railroad Freight Improvement Project planning and design.	\$4,652,536	\$3,256,775
SEHSR Tier II	Project level EIS examining route alternatives, costs and environmental impacts of SEHSR project.	\$3,975,000	\$1,563,500
VRE Cherry Hill Station and Third Track Phase 3	Involves the improvement of rail infrastructure in the 11.4-mile corridor between Powells Creek and Arkendale. Includes construction of a third track in the CSXT right-of-way and slope stabilization.	\$17,600,000	\$12,320,000

Project	Project Description	Total Project Cost	Rail Enhancement Fund
Port of Hampton Roads	Craney Island rail connector to expand port facilities and railroad access.	\$26,200,000	\$18,340,000
Port of Hampton Roads	Norfolk International Terminal central rail yard expansion.	\$41,709,286	\$17,475,000
<b>Total Project Costs and Grant Requests</b>		<b>\$428,864,683</b>	<b>\$217,249,577</b>

<sup>1</sup>TEU: Twenty-foot equivalent unit, a measure of the size of an intermodal container

In summary, DRPT has embarked on an ambitious program of passenger rail enhancements that will encumber the limited resources of the existing Rail Enhancement Fund. Funded primarily by car rental taxes, the Rail Enhancement Fund is anticipated to provide \$76.9 million for projects in FY10. With over \$217 million in Rail Enhancement Funds requested in support of \$430.8 million in projects, either the capital improvement program must be extended over a longer period, resources apportioned to the Fund must be increased to keep pace with growing program demand, or the funds must be allocated among the highest priority projects.

### 4.3 Estimated Costs and Revenues

An analysis of the estimated costs and revenues associated with the proposed action was conducted to determine whether there are funding shortfalls in either capital or operating budgets for the alternatives under consideration for the project. This section describes the analysis of funding sources and the allocation of funds.

#### 4.3.1 Capital Costs

The first component of the financial analysis is the capital plan, which documents the estimate of probable cost for railroad infrastructure investment for the studied alternatives. This element of the analysis describes the cost to design and construct the proposed rail system improvements. The capital cost estimates reflect the findings of the *Engineering Feasibility Analysis* of November 2005, as revised in April 2008 to adjust the costs to 2008 dollars.

The preliminary estimate of probable costs emphasized train operations and related facilities needed to support increased frequencies and higher speed service. In addition to the Status Quo and No Action Alternatives, which consist of the existing passenger rail service and planned improvements to the rail infrastructure, the array of possible configurations for the Build alternatives was narrowed to a general set of improvements required for the Peninsula/CSXT route and Southside/NS route alternatives for the cost analysis. These alternatives are described in more detail in Chapter 2 *Alternatives Considered*.

##### 4.3.1.1 Peninsula/CSXT Route Rail Infrastructure Improvements

Planning the concept level design and operations for conventional and high-speed passenger rail infrastructure improvements along the Peninsula/CSXT route required the consideration of several operating scenarios and associated capital improvements. The goal of each scenario was to minimize the probability of passenger and freight train schedule conflicts in the Peninsula/CSXT route. The operating scenarios considered the following:

- Add additional segments of double track, modify interlockings, make additional operational improvements that would minimize freight and passenger train conflicts, and provide sufficient lengths of double track where a passenger train could overtake and pass a slower train without either train being required to stop;
- Design passenger schedules so that trains traveling in opposite directions pass at locations where freight operations would not be disrupted; and
- Recommend operating strategies that would minimize conflicts in congested yard and terminal areas.

Grade-crossing improvements and elimination are included in the higher speed cost estimates as well as other track and signal improvements.

For the 110-mph speed option, separation of freight trains and higher speed passenger trains using a new dedicated passenger track is required in order to avoid all conflicts. A more detailed description of the infrastructure improvements is contained in the *Engineering Feasibility Analysis* dated November 2005, as revised.

#### 4.3.1.2 Southside/NS Route Rail Infrastructure Improvements

Planning the concept level design and operations for conventional and high-speed passenger rail infrastructure improvements along the Southside/NS route required the consideration of several operating scenarios and associated capital improvements. The operating scenarios considered the following:

- Create track connections, modify interlockings, and make additional operational improvements that would result in segments of track where freight and passenger train conflicts would be minimized in Petersburg (west end) and at Suffolk (east end);
- Provide a passing siding of sufficient length in the most effective location—a third track to be used by freight trains—where a passenger train could overtake and pass a slower freight train without either train being required to stop;
- Design passenger schedules so that trains traveling in opposite directions meet in terminals or pass at locations where freight operations would not be disrupted.

Included in the capital cost estimates is a 13-mile third track between interlockings at “Waverly” (N59.5) and “47 Crossover” (N46.5). The third track would be long enough to permit a freight train to enter it at 45 mph and proceed at speed through the siding while a passenger train would overtake and pass it. Constructing a new passenger route using the abandoned Virginian Railway right-of-way and the CSXT Portsmouth Subdivision avoids conflicts with NS freight trains at Norfolk. The cost to connect the NS line to the CSXT Portsmouth Subdivision at Kilby and reinstall the former Virginian Railway main line is included in the Southside/NS route estimates.

In addition, the cost of infrastructure improvements between Richmond and Petersburg and the connections at Petersburg were included in the estimated cost of the Southside/NS route improvements. The costs associated with those improvements range from \$54.9 million to \$148.9 million, depending on the selected connection option.<sup>46</sup>

As discussed in Chapter 1, DRPT and the North Carolina Department of Transportation have identified the route alternatives through the Petersburg area in the SEHSR Project. The project level subsequent analysis for the Richmond/Hampton Roads Passenger Rail Project will select the preferred route alignment through the Petersburg area. For purposes of this Tier I Draft EIS, the higher cost of the Richmond–Petersburg segment of the Southside/NS route was used for evaluation.

For the 110-mph speed option, separation of freight trains and higher speed passenger trains using a new dedicated passenger track is required in order to avoid all conflicts. A more detailed description of the infrastructure improvements is contained in the *Engineering Feasibility Analysis* dated November 2005, as revised.

#### 4.3.1.3 Estimates of Probable Costs

Cost estimates include a 40 percent contingency to account for uncertainties at the program level of analysis. Cost estimates for the alternatives examined exclude rolling stock or proposed storage and maintenance facilities in Norfolk and Newport News. For the purposes of alternative evaluation, the excluded capital expenditures are common to all alternatives and would therefore have a marginal effect on the evaluation of alternatives. Consequently, more detailed cost estimates that include these other elements of infrastructure and capital items, such as rolling stock, will be required during subsequent Tier II analysis.

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<sup>46</sup> Parsons, *Richmond to Hampton Roads High-Speed Rail Feasibility Study*; Virginia Department of Rail and Public Transportation; Richmond, VA, April 2002. Cost estimates were updated to 2008 \$.

The preliminary estimates of probable capital costs for the proposed Build alternatives are presented in Table 4-2. Costs were estimated for year 2008 and are in constant dollars. These costs reflect only those elements associated with planning, design and construction of the alternatives and reflect the physical features associated with each alignment including stations, track and bridge improvements and other infrastructure.

**Table 4-2: Preliminary Estimate of Probable Capital Cost (Millions \$ 2008)**

Capital Cost Category	Alternative 1		Alternative 2a		Alternative 2b	
	90 mph	110 mph	90 mph	110 mph	90 mph	110 mph
<b>Peninsula/CSXT Route Subtotal</b>	No Action	No Action	\$330.0	\$431.9	\$330.0	\$431.9
<b>Southside/NS Route</b>						
Richmond – Petersburg <sup>a</sup>	\$148.9	\$148.9	\$148.9	\$148.9	No trains	No trains
Petersburg - Norfolk	326.5	394.1	263.4 <sup>b</sup>	263.4 <sup>b</sup>	No trains	No trains
<b>Southside/NS Subtotal</b>	475.4	543.0	412.3	412.3	No trains	No trains
<b>Total Per Alternative</b>	<b>\$475.4</b>	<b>\$543.0</b>	<b>\$742.3</b>	<b>\$844.2</b>	<b>\$330.0</b>	<b>\$431.9</b>

Source: Engineering Feasibility Analysis; November 2005 revised March 2008

**NOTES**

<sup>a</sup> Richmond - Petersburg costs use the high estimate from the Richmond to Hampton Roads High-Speed Rail Feasibility Study; April 2002. All cost estimates were updated to 2008 \$.

<sup>b</sup> NS between Petersburg and Norfolk would be 79 mph maximum authorized speed in Alternative 2a.

### 4.3.2 Estimates of Probable Annual Operating and Maintenance Costs

Amtrak and its host freight railroads are responsible for operating the existing passenger rail system and for maintaining the track, respectively. Projections of annual operating costs for the proposed passenger rail system improvements and maintenance costs for the existing system are estimated based on historic costs. Annual operating expenses for the alternatives were developed based on the forecast of passengers, passenger miles and revenue developed by the *Travel Demand Methodology and Results Report* (March 2008) for each alternative evaluated.

In developing the annual operating costs, the assumed train consists of two diesel locomotives and six cars based on the train requirements to serve anticipated connections to the SEHSR and Acela services. Each of the alternatives assumed an operating schedule developed specifically for this project. The schedules for this project were coordinated with schedules previously established in reports for the SEHSR project and the prior *Richmond-South Hampton Roads High-Speed Rail Feasibility Study*. Those reports identified that a maximum of nine round-trip trains per day could be operated between Hampton Roads and points north of Richmond.

The annual operating costs represent the cost to operate trains between Hampton Roads and Richmond. The assumptions used in the development of these costs are based on existing Amtrak operating procedures in which train crews are assigned to operate trains between Washington, DC and points south, such as Richmond<sup>47</sup>.

Table 4-3 indicates the total annual operating cost for each alternative as compared to the Status Quo and No Action Alternatives. The Status Quo Alternative includes the existing two daily round-trip trains on the Peninsula/CSX route, while the No Action Alternative includes the addition of one round-trip train on the same route, for a total of three daily round-trip trains operating at a maximum speed of 79 mph between the Newport News Amtrak Station and Washington, DC. Alternative 1 maintains the No Action service on the Peninsula/CSXT route and provides six higher speed trains on the Southside/NS route. Alternative 2a operates six round-trip trains at higher speeds on the Peninsula/CSXT route while adding three conventional speed passenger trains on the Southside/NS route. Alternative 2b provides nine round-trip higher speed trains on the Peninsula/CSXT route.

<sup>47</sup> Crews based in Staples Mills Road Station operate Newport News trains between Richmond and Newport News.

**Table 4-3: Estimate of Probable Annual Operating & Maintenance Costs (Millions \$ 2008)**

Annual Operating and Maintenance Costs	Status Quo 79 mph	No Action 79 mph	Alternative 1		Alternative 2a		Alternative 2b	
			90 mph	110 mph	90 mph	110 mph	90 mph	110 mph
Peninsula/ CSXT Route	\$16.9	\$21.3	\$21.3	\$21.3	\$53.4	\$54.9	\$71.7	\$72.4
Southside/NS Route	No train	No train	\$58.7	\$60.1	\$24.5	\$24.5	No train	No train
<b>Annual Costs</b>	<b>\$16.9</b>	<b>\$21.3</b>	<b>\$80.0</b>	<b>\$81.4</b>	<b>\$77.9</b>	<b>\$79.4</b>	<b>\$71.7</b>	<b>\$72.4</b>
Difference from Status Quo		\$4.4	\$63.1	\$64.5	\$61.0	\$62.5	\$54.8	\$55.5
Difference from No Action			\$58.7	\$60.1	\$56.6	\$58.1	\$50.4	\$51.1

Source: Parsons, *Operations and Maintenance Cost Estimates*; April 2005 as revised March 2008.

### 4.3.3 Projected Annual Operating Revenue

Annual operating revenue forecasts were based on the travel demand model and the 2007 Amtrak fare structure in which the average fare for a specific station pair equals the 2007 revenue divided by the ridership for the station pair. A more detailed discussion of the derivation of average fares for station pairs is in the *Ridership Methodology and Results Report* (May 2009).<sup>48</sup>

The range of revenue forecasts highlights the sensitivity to key assumptions in the travel demand forecasting model. As discussed in Chapter 3.1, the on-time performance of the proposed service and the future highway speeds outside the Richmond/Hampton Roads study area affect ridership and therefore revenue forecasts. The same forecasting assumptions outlined in Chapter 3.1 were used to derive conservative and optimistic annual revenue estimates.

Table 4-4 outlines the estimated range of probable annual revenue for the 2025 forecast year using 2008 constant dollars as a unit of measure for each alternative as compared to the Status Quo and No Action alternatives. The Status Quo and No Action alternatives are the same as described under annual operating costs.

**Table 4-4: Estimated Range of Probable Annual Operating Revenue in 2025 (Millions \$ 2008)**

Annual 2025 Revenue Range by Route and Total	Status Quo 79 mph	No Action 79 mph	Alternative 1		Alternative 2a		Alternative 2b	
			90 mph	110 mph	90 mph	110 mph	90 mph	110 mph
Peninsula/CSXT high	\$15.95	\$28.07	\$11.31	\$11.23	\$59.27	\$62.17	\$68.01	\$70.51
Peninsula/CSXT low	\$14.49	\$24.95	\$10.52	\$10.41	\$46.60	\$48.55	\$54.02	\$56.08
NS/Southside high	No train	No train	\$57.81	\$60.89	\$9.89	\$9.05	No train	No train
NS/Southside low	No train	No train	\$45.98	\$48.57	\$8.84	\$8.59	No train	No train
<b>Total High</b>	<b>\$15.95</b>	<b>\$28.07</b>	<b>\$69.12</b>	<b>\$72.12</b>	<b>\$69.16</b>	<b>\$71.23</b>	<b>\$68.01</b>	<b>\$70.51</b>
<b>Total Low</b>	<b>\$14.49</b>	<b>\$24.95</b>	<b>\$56.50</b>	<b>\$58.98</b>	<b>\$55.44</b>	<b>\$57.14</b>	<b>\$54.02</b>	<b>\$56.08</b>
<b>Difference from Status Quo Alternative</b>								
High		\$12.12	\$53.17	\$56.16	\$53.20	\$55.28	\$52.06	\$54.56
Low		\$10.46	\$42.02	\$44.49	\$40.95	\$42.65	\$39.53	\$41.59
<b>Difference from No Action Alternative</b>								
High			\$41.05	\$44.04	\$41.08	\$43.16	\$39.94	\$42.44
Low			\$31.56	\$34.03	\$30.49	\$32.19	\$29.07	\$31.13

Source: *Ridership Methodology and Results Report*; May 2009.

Alternative 1 provides marginally higher incremental annual operating revenue than Alternative 2b at all speed options, and nearly no difference from Alternative 2a, since the average trip distance is higher on the Southside/NS route. Fares, which are distance based, are higher in the Southside/NS route resulting in slightly higher annual operating revenue for alternatives with trains operating on the Southside/NS route.

<sup>48</sup> Ridership and revenue forecasts use 2025 as a planning horizon year based on data available from MPO long range plans.

## 4.4 Other Potential Funding Sources

DRPT has determined that funding and revenue for the planning, design, construction, operation and maintenance of the various alternatives under evaluation need to be generated through a variety of sources including federal, state and local funding programs and mechanisms. The following summarizes the major federal, state and local transportation funding programs:

### 4.4.1 Federal Capital Assistance Funds

The federal government receives funds for transportation from gas tax revenues and other user fees, which are placed in the Highway Trust Fund. These funds are then allocated to the states based on a statutory formula. Federal grants have historically been a major funding source for highways and public transportation systems, financing as much as 80 percent of capital outlays for such projects. Highway Trust Fund resources are not available for intercity passenger rail projects. In recent years, however, federal contributions to local governments including funding for transportation projects have greatly decreased as a percentage of total project costs. As a result, states and local governments are assuming an increasingly larger role in funding transportation projects from their own resources.

- Federal funding for passenger rail infrastructure has recently been increased by the enactment of new laws that created a federal grant program that would enable states to invest in passenger rail services similar to grants in aid for highways, public transportation, airports and port improvements. Federal funding programs that are available for freight, intercity, high-speed, and commuter rail projects are described below:
- **Capital Assistance to States—Intercity Passenger Rail Service Program** – Congress enacted the Capital Assistance to States – Intercity Passenger Rail Service Program to establish a long-term partnership between States and the Federal Government to support intercity passenger rail service development. The FRA announced that the capital grant program (Catalog of Federal Domestic Assistance (CFDA) Program Number 20.317) will be supported with \$30,000,000 of federal funds provided to the FRA as part of the Transportation, Housing and Urban Development, and Related Agencies Appropriations Act, 2008 (Division K of Pub. L. 110–161 (December 26, 2007). The President’s FY 2010 budget proposes \$1 billion for capital assistance for High-Speed Rail Corridors and Intercity Passenger Rail Service. Funds provided under this program may constitute no more than 50 percent of the total cost of a selected project, with the remaining cost funded from other sources. Eligible projects include capital improvements (fixed facilities and rolling stock) necessary to support improved or new intercity passenger rail services, and planning activities that lead directly to the development of a passenger rail corridor investment plan. On February 19, 2008, the FRA issued a Notice of Funding Availability and solicited grant applications for FY 2008. Virginia received an FY 2008 grant of \$2 million for the construction of a third track south of Fredericksburg in Spotsylvania County. The project includes the rehabilitation of 3.1 miles of existing track to serve as a third track for passing. The federal funding for this project will enable Virginia to also conduct preliminary engineering for the AM interlocking near Richmond Main Street Station, with a potential extension of the design from the Main Street Station through Acca Yard to the Staples Mill Station.
- **Passenger Rail Investment and Improvement Act of 2008** - The Passenger Rail Investment and Improvement Act of 2008 (PRIIA) authorizes, through FY 2013, a program similar to the Capital Assistance to States – Intercity Passenger Rail Service Program that provides capital funding to states for intercity passenger rail service. PRIIA contains many provisions, but the essential program elements include the following:
- **Intercity Passenger Rail Service Corridor Capital Assistance Program:** In concert with a State Rail Plan requirement, PRIIA creates the framework for a new intercity passenger rail service corridor capital assistance program [§301]. Funds are authorized to be appropriated to USDOT to provide grants for capital investments benefiting intercity passenger rail service. Eligible applicants include states (including the District of Columbia), groups of states, Interstate Compacts, and public agencies with responsibility for providing intercity passenger rail service established by one or more states. The FRA can use appropriated funds to make grants to assist in financing the capital costs of facilities, infrastructure and equipment necessary to provide or

improve intercity passenger rail transportation. PRIIA describes project selection criteria and required grant conditions.

- **High-Speed Rail Corridor Development:** PRIIA also authorizes the appropriation of funds to USDOT to establish and implement a high-speed rail corridor development program [§501]. Eligible applicants include a state (including the District of Columbia), a group of states, an Interstate Compact or a public agency established by one or more states with responsibility for high-speed rail or Amtrak service. Eligible corridors include the ten high-speed rail corridors previously designated by USDOT, which includes the Richmond–Hampton Roads region. Grants may be used for capital projects that are broadly defined to include typical activities in support of acquiring, constructing, or improving rail infrastructure and equipment. The FRA will develop grant application requirements and PRIIA identifies a number of grant evaluation criteria, such that the project must be part of a State Rail Plan, that the applicant must have the ability to carry out the project, and that the project will result in significant improvements to intercity passenger rail service.
- **Congestion Relief:** PRIIA authorizes the appropriation of funds for grants to states or to Amtrak in cooperation with states to finance the capital costs of facilities, infrastructure, and equipment for high priority rail corridor projects necessary to reduce traffic congestion or facilitate ridership growth in intercity passenger rail transportation [§302]. Eligible projects are those identified by Amtrak to reduce congestion or facilitate ridership growth in heavily traveled rail corridors, those identified by the Surface Transportation Board to improve on-time performance and reliability, and those designated by the FRA as projects that meet the program's purpose and are ready for implementation. The FRA will establish appropriate grant eligibility, qualifications, and administration requirements and conditions.
- **American Recovery and Reinvestment Act of 2009** - The American Recovery and Reinvestment Act of 2009 (ARRA) was signed into law on February 17, 2009. The Act is an extraordinary response to an economic crisis and includes measures to modernize our nation's infrastructure and support energy independence. ARRA addresses the nation's rail challenges by investing in an efficient, high-speed passenger rail network of 100- to 600-mile intercity rail corridors that will connect communities across America. Developing a comprehensive high-speed intercity passenger rail network will require a long-term commitment at both the federal and state levels. The first step in this process was to present a strategic plan outlining the vision and goals of a high-speed transportation network. The Strategic Plan presented by the President outlines his vision to transform the nation's transportation system by rebuilding existing rail infrastructure while developing a comprehensive high-speed intercity passenger rail network through a long-term commitment at both the federal and state levels. This plan draws from the successful highway and aviation development models. ARRA provides \$8 billion for high-speed rail projects nationwide to begin implementing the vision. Under this Act, there are three specific rail grant programs:
  - High-speed rail corridor development grants (authorized in Section 501 of the Passenger Rail Investment and Improvement Act of 2008 (PRIIA), Public Law 110-432, Division B, as 49 U.S.C. §26101 et seq.;
  - Intercity passenger rail service corridor capital assistance grants (authorized in Section 301 of PRIIA), 49 U.S.C. Chapter 244; and
  - Congestion grants (authorized in Section 302 of PRIIA), as 49 U.S.C (§24105).
- **Transportation Infrastructure Finance & Innovation Act of 1998 (TIFIA):** TIFIA is a targeted investment program that is part of the Safe, Accountable, Flexible Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU), which was signed into law on August 10, 2005. The FRA administers the program, which consists of three types of funding designed to address requirements throughout a project's life cycle. These are secured loans, loan guarantees, and lines of credit. Any project eligible for federal funding through surface transportation programs is

eligible for the TIFIA program. TIFIA funds international bridges and tunnels as well as intercity passenger bus and rail facilities and vehicles.<sup>49</sup>

- **Railroad Rehabilitation & Improvement Financing (RRIF):** The RRIF program was created under the Transportation Equity Act for the 21<sup>st</sup> Century (TEA-21) and expanded as part of SAFETEA-LU. The FRA administers this program. Under this program, direct loans and loan guarantees up to \$35 billion are available to acquire, improve or rehabilitate intermodal freight or rail equipment or facilities; refinance outstanding debt incurred for the purposes listed above; or develop or establish new intermodal freight or railroad facilities.
- **High-Speed Ground Transportation - Next Generation High-Speed Rail Program:** This program was initiated in FY 1995, and focuses on technology development in (a) High-Speed, High-Acceleration Fossil-Fueled Locomotives; (b) Advanced Communications Based Train Control Systems; (c) Highway-Rail Grade Crossing Sensor and Warning Systems; and (d) Low Cost, Innovative Technologies. The FRA administers this program for research, development, design or operations of incremental high-speed passenger rail service.
- **High-Speed Rail Demonstration Funds:** The FRA sponsors the Innovations Deserving Exploratory Analysis (IDEA) program. The program solicits proposals that will help attain the goal of cost-effective improvements to current rail infrastructure for high-speed passenger travel, ultimately leading to a viable high-speed rail system in the U.S. The projects are selected based on their potential to support upgrades to the existing rail system that will accommodate operating speeds of at least 125 mph.
- **Section 5309 Capital Program:** This program is administered by the Federal Transit Administration (FTA). It is the federal government's primary source of federal capital funds for the construction of new fixed guideway and non-fixed guideway public transportation systems and extensions to existing systems. Section 5309 grants are discretionary funds applied as a percentage of the cost of each investment. This program could fund commuter rail capital improvements similar to the improvements being made in the Washington, DC to Fredericksburg corridor for VRE. Commuter rail service between Richmond and Hampton Roads would potentially be eligible for Section 5309 capital funding.
- **Regional Surface Transportation Funds (Regional STP Funds):** Regional STP funds are available for transit projects to be used for a variety of transit improvements such as new fixed guideway projects including commuter rail improvements, bus purchases, construction and rehabilitation of rail stations, maintenance facility construction and renovations, alternatively-fueled bus purchases, bus transfer facilities, multimodal transportation centers and advanced technology fare collection systems.

#### 4.4.2 State Capital and Operating Funding

Listed below are various funds that DRPT utilizes to support and fund rail and public transportation programs in Virginia:

- **Commonwealth's Transportation Trust Fund (TTF):** This program is maintained by VDOT, which oversees the distribution of TTF funds to Virginia's transportation agencies by statutory formula. TTF funds are the primary source of funding for the capital and operating programs of the state's public transportation and commuter rail programs administered by DRPT. TTF funds also provide a state match to both the federal Regional STP funds and other federal public transportation programs. Any commuter rail service that is initiated as part of this project could qualify for funding under this program.
- **Rail Enhancement Fund (REF):** This fund, created in 2005, is a dedicated source of rail capital funding through a portion of the state's rental car tax. It provides approximately \$23 million in annual funding for intercity passenger, commuter and freight rail studies and capital improvements throughout the state. A minimum matching contribution of 30 percent is required

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<sup>49</sup> *Fact Sheets On Highway Provisions, Transportation Infrastructure Finance And Innovation Act (TIFIA) Website:*  
<http://www.fhwa.dot.gov/safetealu/factsheets/tifia.htm>

from non-state sources such as railroads, local governments or regional authorities.<sup>50</sup> This fund is for acquiring, leasing, and/or improving railways or railroad equipment, rolling stock, rights-of-way or facilities for freight and/or passenger rail purposes. In FY 2009, the fund provided \$37.7million to support rail improvement projects for Virginia.

- **Transportation Capital Bonds:** With the passage of HB 3202, April 2007, the Commonwealth provides rail capital bonds in the amount of approximately \$12 million per year which can be used to fund rail capital projects.
- **Operating Assistance Funds:** There is currently no dedicated operating assistance fund for passenger rail operations. Proposed passenger rail operating assistance for state funded intercity passenger rail services will be provided by Commonwealth Transportation Funds de-obligated from projects with remaining balances.

#### 4.4.3 Local Capital and Operating Funding

Most cities rely on general fund revenues to support their financial contributions to the area public transportation operator. For example, in the Hampton Roads region, local governments contribute to a working capital reserve fund, which provides Hampton Roads Transit (HRT) with working capital equivalent to 45 days of expenses. Other possible sources of funding include the following:

- **Vehicle License Fees:** A portion of local funding for this project could come from increases in vehicle license fees, which could include fees for city decals and vehicle registration.
- **User Fees:** Passenger fares would provide a source of funds for the project's operating costs.
- **Motor Fuels Sales Tax:** The use of motor fuels tax to fund and finance the project could be considered. The Northern Virginia Transportation Commission (NVTC), as well as the Potomac and Rappahannock Transportation Commission (PRTC), currently utilize this funding strategy for VRE commuter rail service. These funds could be used for operations, capital expenses or debt coverage of transportation systems in the region, or for any other transportation purpose in the region.
- **Other Local Taxes:** Other local taxes that could be considered include:
  - Cigarette Tax
  - Alcohol Tax
  - Corporate Income Tax
  - Personal Property Tax
  - Employer Payroll Tax
  - Utility Tax
  - Recordation Tax
  - Lodging or Meal Taxes
  - Local Income Tax
  - Parking or Emissions Taxes.

#### 4.5 Preliminary Funding Assumptions and Requirements

The funding share assumptions for the capital and operating costs for this project are presented in this section, including the amounts of each resource required to construct, operate and maintain the project under the assumed funding sources.

#### 4.5.1 Total Capital Funding Assumptions and Requirements

Several assumptions were made with regard to funding the estimated infrastructure requirements. At the federal level, DRPT assumes that the federal government will provide states with capital grants that account for up to 80 percent of the total project cost of an intercity passenger rail improvement project. This assumption is based on recently enacted legislation by Congress that would fund passenger rail projects similar to other federal grants programs, such as programs that fund highway and public transportation investment projects at up to 80 percent or greater of the total project cost. Several federal grant programs currently exist that could fund the passenger rail capital improvements contemplated for the Richmond/Hampton Roads Passenger Rail Project.

At the state level, the Rail Enhancement Fund has the ability to provide up to \$23 million in annual, dedicated funding for passenger or freight rail capital improvements in Virginia. Use of these funds will require a minimum matching contribution of at least 30 percent, which must come from non-state sources such as railroads, local governments or regional authorities. Rail capital bonds may also be used and administered similarly to Rail Enhancement Fund revenues.

Table 4-5 illustrates the estimated total capital funding requirements for each of the alternatives under consideration, assuming a federal grant program will be created to fund 80 percent of the cost. With no federal grant program in place today, the non-federal share is 100 percent of total project cost.

**Table 4-5: Estimate of Total Capital Funding Requirements (Millions \$ 2008)**

Funding Category	Alternative 1		Alternative 2a		Alternative 2b	
	90 mph	110 mph	90 mph	110 mph	90 mph	110 mph
Infrastructure	\$475.40	\$543.00	\$742.30	\$844.20	\$330.00	\$431.90
Federal	\$380.32	\$434.40	\$593.84	\$675.36	\$264.00	\$345.52
Non-federal	\$95.08	\$108.60	\$148.46	\$168.84	\$66.00	\$86.38
<b>Shortfall</b>	0	0	0	0	0	0

Annual allocations of Rail Enhancement Fund resources may partially fund the non-federal share of total project capital costs. With the Rail Enhancement Fund providing a maximum of \$23 million per year for all rail capital projects in the Commonwealth, the financial capacity of DRPT to accommodate this project is dependent on the total amount of grant requests for other projects and the timing of construction for other projects. A growing number of projects applying for Rail Enhancement funding will require either additional state or local funding appropriations for capital infrastructure or deferral of the projects until funding is available.

#### 4.5.2 Annual Operating Surplus and Deficits

Table 4-6 summarizes the annual operating surplus and deficits for the alternatives examined, based upon the assumptions indicated in the *Travel Demand Methodology and Results Report* (March 2008) and the operating cost assumptions and estimates contained in the *Engineering Feasibility Analysis Report* as revised (April 2008).

Table 4-6: Estimate of Probable Annual Operating Surplus and (Deficits) (Millions \$ 2008)

Annual Revenue Range by Route and Total	Status Quo 79 mph	No Action 79 mph	Alternative 1		Alternative 2a		Alternative 2b	
			90 mph	110 mph	90 mph	110 mph	90 mph	110 mph
Peninsula/CSXT Route high	\$15.95	\$28.07	\$11.31*	\$11.23*	\$59.27	\$62.17	\$68.01	\$70.51
Peninsula/CSXT Route low	\$14.49	\$24.95	\$10.52*	\$10.41*	\$46.60	\$48.55	\$54.02	\$56.08
Southside/NS Route high	No train	No train	\$57.81	\$60.89	\$9.89*	\$9.05*	No train	No train
Southside/NS Route low	No train	No train	\$45.98	\$48.57	\$8.84*	\$8.59*	No train	No train
<b>Total Annual High</b>	\$15.95	\$28.07	\$69.12	\$72.12	\$69.16	\$71.23	\$68.01	\$70.51
<b>Total Annual Low</b>	\$14.49	\$24.95	\$56.50	\$58.98	\$55.44	\$57.14	\$54.02	\$56.08
<b>Annual Operating Costs by Route and Total</b>								
Peninsula/CSXT Route	\$16.9	\$21.3	\$21.3*	\$21.3*	\$53.4	\$54.9	\$71.7	\$72.4
Southside/NS Route	No train	No train	\$58.7	\$60.1	\$24.5*	\$24.5*	No train	No train
<b>Total Annual O&amp;M Costs</b>	\$16.9	\$21.3	\$80.0	\$81.4	\$77.9	\$79.4	\$71.7	\$72.4
<b>Annual Operating Surplus (Deficits) by Route and Total</b>								
Peninsula/CSXT Route high	(\$0.95)	\$6.77	(\$9.99)*	(\$10.07)*	\$5.87	\$7.27	(\$3.69)	(\$1.89)
Peninsula/CSXT Route low	(\$2.41)	\$3.65	(\$10.78)*	(\$10.89)*	(\$6.80)	(\$6.35)	(\$17.68)	(\$16.32)
Southside/NS Route high	No train	No train	(\$0.89)	\$0.79	(\$14.61)*	(\$15.45)*	No train	No train
Southside/NS Route low	No train	No train	(\$12.72)	(\$11.53)	(\$15.66)*	(\$15.91)*	No train	No train
<b>Total Annual Surplus (Deficit) High</b>	(\$0.95)	\$6.77	(\$10.88)	(\$9.28)	(\$8.74)	(\$8.17)	(\$3.69)	(\$1.89)
<b>Total Annual Surplus (Deficit) Low</b>	(\$2.41)	\$3.65	(\$23.50)	(\$22.42)	(\$22.46)	(\$22.26)	(\$17.68)	(\$16.32)

\* denotes 79-mph MAS train service

Source: Ridership Results Report; May 2009 and Engineering Feasibility Analysis Technical Memorandum November 2005, revised March 2008.

Annual revenue exceeds operating costs for the No Action Alternative under all travel demand assumptions. All of the Build alternatives would operate with an annual deficit except for the three round-trip trains on the Peninsula/CSXT route in Alternative 2a, and even in this case, the service operates at a surplus in only the high, or optimistic, scenario. All other Peninsula/CSX trains generate operating deficits ranging from \$1.89 million to \$17.68 million annually. The higher speed 110-mph train operating on the Southside/NS route in Alternative 2a is the only Southside/NS service that generates a small annual surplus. All other Southside/NS trains generate deficits ranging from \$0.89 million to \$15.91 million annually.

#### 4.6 Financial Capacity Analysis

DRPT's financial capacity to undertake major passenger rail improvement projects throughout the state is constrained by limited resources and competing needs to address numerous priorities. Other major passenger rail improvement initiatives underway today include the Commonwealth's investment in new intercity passenger rail service between Lynchburg, Richmond and Washington, DC, significant capital investments to improve service in the Washington, DC to Richmond corridor and potential commitments to fund track and right-of-way improvements in support of the SEHSR project. In freight rail, major initiatives

include freight rail shipping improvements at the Port of Virginia and along two major freight corridors: the Route460/Heartland Corridor and the National Gateway.

Capital costs for all Build alternatives for this project exceed the available funding in the Rail Enhancement Fund. If the Commonwealth were to pursue construction of this project using the Rail Enhancement Fund as the primary funding source, it would require the deferment of other critical capital infrastructure needs, particularly if there are no federal funds available to support the project.

Moreover, Virginia's budget for new transportation construction and expansion projects is shrinking while the demands on the state's transportation system are increasing. The Rail Enhancement Fund, similar to other state funding sources, is supported by revenue generated through state tax receipts and has experienced some declines in available revenue during the recent economic downturn. In addition, the last significant increase in new transportation funds for Virginia was enacted in January 1987, when the Commonwealth raised the gas tax to its current 17.5-cent level, added one-half percent to the state sales tax, and increased the motor vehicle sales and use tax by 1 percent. Considering inflation since 1987, the motor fuels tax revenue's purchasing power has decreased by nearly 40 percent. With no significant increases in transportation funding, more and more of the available funds must be used for maintenance, which means less can be utilized for new project development.

Most transportation projects in the U.S. require some level of state and federal funding participation in order to be successfully implemented. Regarding the availability of operating funds for this project, there is no dedicated source of intercity passenger rail operating funds in Virginia and there is no federal program for new intercity passenger rail operations today. Since all of the Build alternatives will likely operate with an annual deficit and the federal government requires state participation in funding the operations of new Amtrak service, a dedicated source of funding will need to be identified at the state level to contribute to the costs of operating this project. Similarly, the introduction of a federal source of operating funds would be beneficial to this project.

## **4.7 Risk and Uncertainty**

Due to the limitations of current funding sources and the significant needs for rail investment at the state level, the financial analysis reveals that DRPT has limited capacity to undertake major long-term investments in high-speed passenger rail projects today. The financial analysis assumes substantial federal participation in the construction of any of the Build alternatives. The federal programs outlined in Section 4.4.1 are primarily discretionary grants for capital improvements and related environmental and engineering studies. The competition for such funds is among the states is intense. There is no assurance that Virginia will be awarded any funds under the PRIIA and ARA programs. The analysis also reveals that there is no dedicated source of intercity passenger rail operating funds in Virginia, and there is no federal operating program.

Although the financial analysis has defined a likely future based on historic and potential funding trends, there are several operating and capital risks associated with the project that could affect a financial plan. Some additional fiscal capacity-related risks to DRPT are present. These risks are noted and described in the following paragraphs.

### **4.7.1 Operating Risks**

In addition to the risk discussed in Section 4.7 regarding the availability of state and federal operating funds, changes in fares, fare policy, and fare structure affect ridership. Ridership is discussed in detail in Chapter 3.1. Ridership affects fare revenue and cost recovery. Ridership also affects service levels, which in turn affect maintenance and operating costs. Ridership and revenue are highly sensitive to on-time performance, which would affect the revenue forecasts and the operating ratio, which is the ratio of operating costs covered by fare revenue. Therefore, if the overall quality, reliability, and availability of the new service is not sustained enough to meet customer demand, ridership could decline and operating costs could increase.

### **4.7.2 Capital Cost Risks**

There remain considerable uncertainties in the capital cost estimates for the Richmond/Hampton Roads Passenger Rail Project due to the limitations noted in the *Engineering Feasibility Analysis Technical*

*Memorandum.* This is not unusual at the conceptual level of planning. A more refined cost estimate will be required during the project level analysis of the selected alternative when the project advances to the 30 percent design stage. To account for these uncertainties, a 40 percent contingency was added to the capital cost estimates. Some of the uncertainties noted include the following:

- No provision is included for costs arising from negotiations with operating railroads regarding crossings or use of right-of-way.
- Only a flat percentage of direct costs has been used to budget for needed right-of-way acquisitions.
- Broad unit costs have been applied for key elements rather than estimates based upon specific designs.
- No detailed allowances have been provided for utilities, wetlands mitigation, and preservation of historic structures, potential hazardous materials or other special site conditions. Many of these costs were accounted for in broad contingency categories. As the design becomes more refined, these costs may be either more or less than the overall 40 percent contingency.
- The rate of inflation may increase as this project advances to the construction phase, causing all material and labor costs to increase.
- Financial risks and credit interest rates may increase as capital markets respond to changes in the financial market and global economy.
- The level of federal participation may be lower than estimated.
- The level of local funding commitment may be lower than estimated.

#### **4.8 Summary of Funding Options**

Ultimately, a proper mix of ownership and management structures combined with adequate funding and financing sources is required for the proposed action. A final financial analysis will be refined in later stages of project level planning for the selected alternative, as cost and revenue estimates are refined and as more detailed engineering and cash flow modeling is undertaken.