Service Development Plan

Prepared for

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1 Introduction

This chapter provides a summary of the New York-Vermont Bi-State Intercity Passenger Rail Study including its background, its location, the improvements being proposed, and prior planning initiatives in the project study area.

1.1 Background

The states of Vermont (VT) and New York (NY) have identified a series of broad transportation goals to improve the quality and equity of transportation services within the southwestern Vermont and eastern central New York region. The 2006 Vermont State Rail and Policy Plan[1] identified two priorities for intercity passenger rail: 1) continued service along routes currently served by Amtrak, and 2) new intercity passenger rail service along the Vermont Railway between Hoosick, NY and Burlington, VT. The 2009 New York State Rail Plan[2] identified numerous projects along the Empire Corridor, which runs between New York City and Niagara Falls, NY and is one of ten Federally-designated high-speed rail corridors in the United States. The Plan includes three priority projects within the Albany area which would facilitate increased rail service to Saratoga Springs and from southwestern Vermont through Mechanicville, NY.

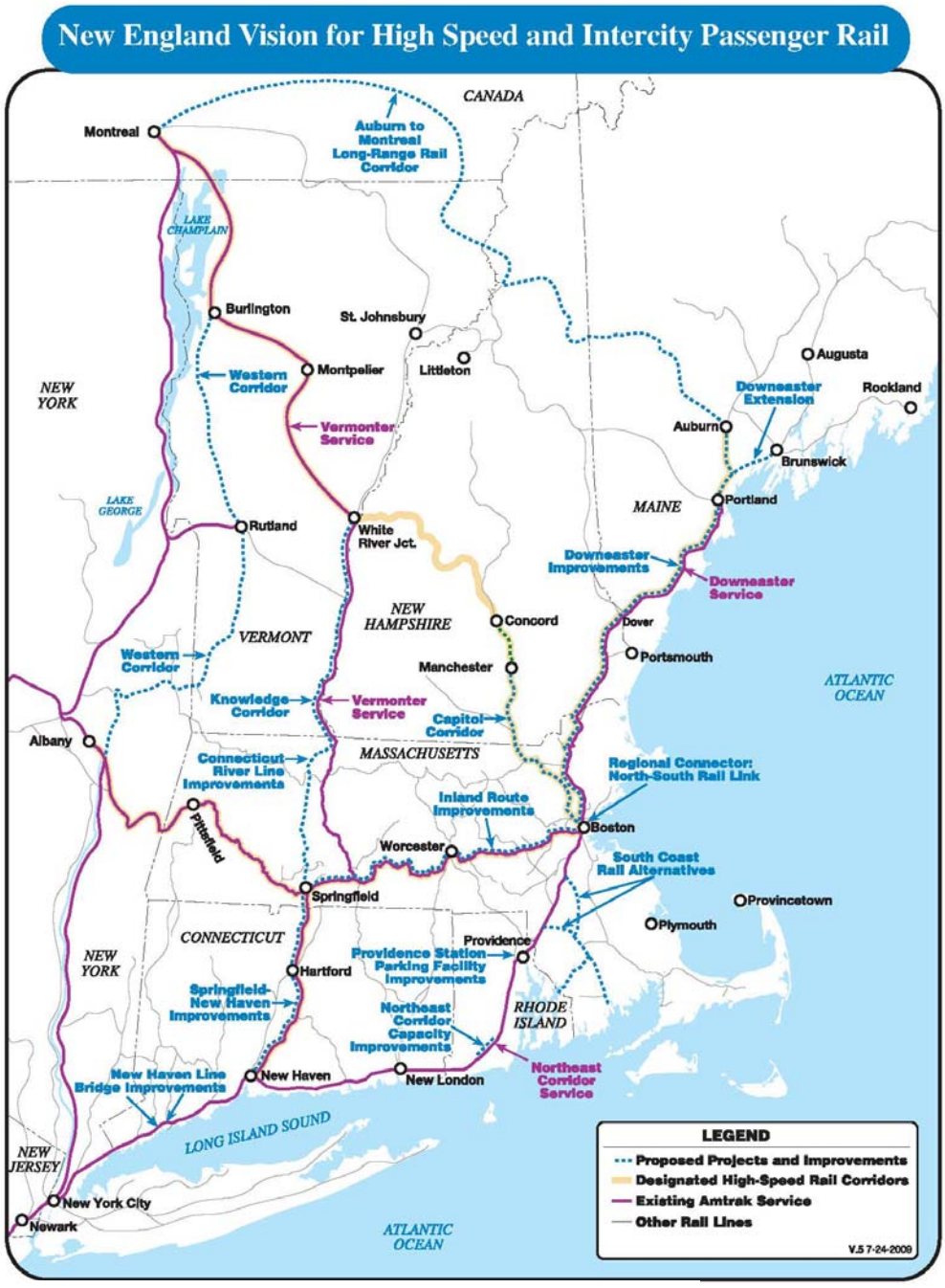
The mapped system in the *Vision for the New England High Speed and Intercity Rail Network* (Figure 1), identifies existing service and potential services within the project study area, including the "Western Corridor" in Vermont and nearby New York communities. This region is

[1] *State of Vermont, State Rail & Policy Plan*, December 2006. Available at http://railroads.vermont.gov/railpolicyplan.htm.
[2] *New York State Rail Plan 2009 – Strategies for a New Age*, February 2009. Available at https://www.nysdot.gov/divisions/policy-and-strategy/planning-bureau/state-rail-plan.

considered an important geographical area and link to the overall rail system because it will provide direct intercity passenger rail connections to communities in southwestern Vermont, which will advance the goal of a continuous, integrated rail system in New England.

This project would aid both New York and Vermont in meeting their strategic rail transportation goals, and would improve intercity passenger rail access to those communities, which are currently underserved or not served at all. Improved service, routing, infrastructure improvements, and travel times could result in substantial increases in ridership between southwestern Vermont/east central New York and the Albany and New York City areas.

Figure 1 New England Vision for High Speed and Intercity Passenger Rail



Source: *Vision for the New England High Speed and Intercity Rail Network*, July 2009.

1.2 Project Description

The project study area encompasses Rutland and Bennington Counties in southwestern Vermont and adjacent areas in eastern central New York State, including Schenectady, Saratoga, Washington, Rensselaer, and Albany Counties. Major cities in the study area include Rutland, Manchester and Bennington in Vermont and Albany, Schenectady, Mechanicville, and Saratoga Springs in New York. (See Figure 2)

The New York-Vermont Bi-State Intercity Passenger Rail Study recommends adding a new passenger service between Rutland, VT and Albany/Rensselaer, NY through southwestern Vermont with stops in Mechanicville, NY and North Bennington and Manchester, VT. Existing passenger rail services, including Adirondack and Ethan Allen would be maintained.

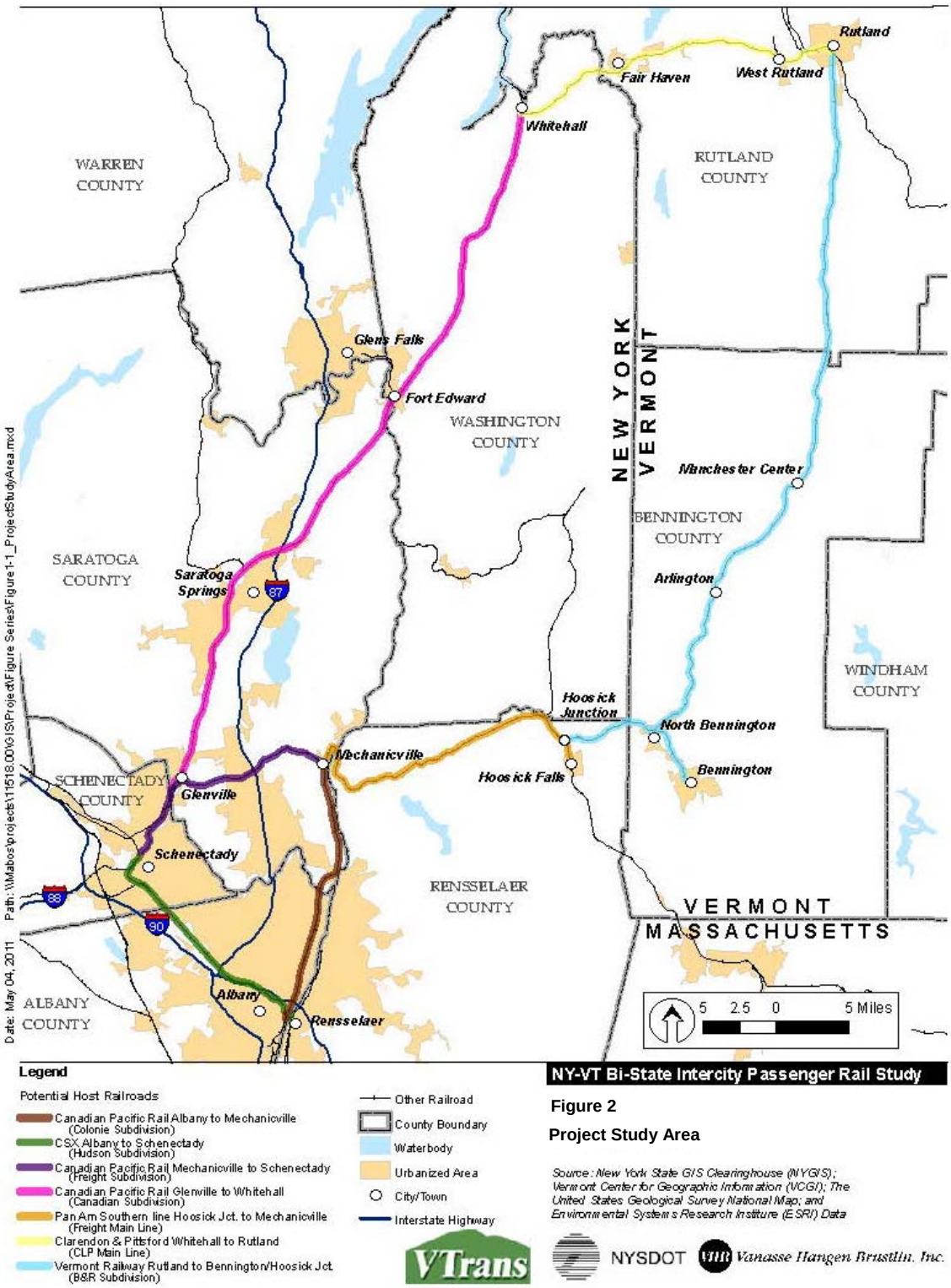


Figure 2

Project Study Area

Source: New York State GIS Clearinghouse (NYGIS); Vermont Center for Geographic Information (VCGI); The United States Geological Survey National Map; and Environmental Systems Research Institute (ESRI) Data

NYSDOT Vanasse Hangen Brustlin, Inc.

1.3 Related Enhancements

This project is one of several projects, each with independent utility that when integrated will collectively improve the transportation network. Programmed and funded improvement projects to the existing rail infrastructure in the study area include:

- Adding a fourth track at Albany/Rensselaer station;
- Adding a second mainline track between Albany/Rensselaer and Schenectady; and
- Constructing two miles of new track at Ballston Spa to provide a five mile double-track segment of right-of-way extending from Saratoga Springs to Ballston Spa, NY.

1.4 Program Partners

The planning and project development activities have been a cooperative and collaborative effort by the Vermont Agency of Transportation (VTrans), New York State Department of Transportation (NYSDOT), Federal Railroad Administration (FRA), Rutland Regional Planning Commission (RRPC), and Bennington County Regional Commission (BCRC). All have participated in project-related discussions in an effort to identify and resolve issues early in the process.

1.5 Freight Railroads

Freight rail service currently operates within the study area with CSX, Canadian Pacific Railway (CP), and Vermont Rail Systems (VRS) and its subsidiaries as shown in Figure 2.

CSX operates freight service on an 18-mile section of track between Rensselaer and Schenectady, which is part of the Hudson Subdivision. CSX owns this segment. The Hudson Subdivision currently serves four freight movements per day. It also serves a bulk transloading facility in Albany. Amtrak has operating rights over the Hudson Subdivision. CP operates freight services over three subdivisions that they own in the project study area including:

- The Colonie Subdivision, the section of track between Albany and Mechanicville along the west side of the Hudson River, which is

approximately 19 miles and currently serves two freight movements per day;

- The Freight Subdivision, the section of track between Mechanicville and Schenectady, which is approximately 17 miles and currently serves 19 freight moves per day. The line serves a yard at Schenectady, NY. Pan Am Railways and Norfolk Southern have operating rights over this subdivision; and,
- The Canadian Subdivision, the section of track between Glenville and Whitehall, which is approximately 54 miles. The Canadian Subdivision currently serves seven freight movements per day. The line serves yards in Saratoga Springs, Fort Edward, and Whitehall, NY. The yard in Whitehall is dispatched by VRS, although its only access is via CP's Canadian Subdivision. Amtrak has operating rights over this right-of-way.
- Vermont Railway (VTR), a subsidiary of VRS, operates freight service on the Burlington and Rutland (B&R) Subdivision, which runs from Hoosick Junction to Rutland. The line is owned by the State of Vermont. The line is approximately 59 miles and currently serves up to eight freight movements per week. The line serves yards in North Bennington and Rutland, VT.
- Clarendon and Pittsford Railroad (CLP), a subsidiary of VRS, operates freight service on its line between Whitehall and Rutland. The line is owned by CLP and is approximately 24 miles. It currently serves up to nine freight movements per week, and serves a yard in Whitehall, NY which is dispatched by VRS. Access to the yard occurs via CP's Canadian Subdivision Line. Amtrak has operating rights over this right-of-way.

1.6 Project History

The New York-Vermont Bi-State Intercity Passenger Rail Study was preceded by a number of studies whose purpose was to improve the transportation network in the region. Three of these studies included:

- The Albany-Bennington-Rutland-Burlington (ABRB) Rail Passenger Service Study (1998), which considered the feasibility of establishing passenger rail service along a route between Albany, NY and Burlington, VT with intermediate stations in North Bennington, Manchester, Rutland, and Middlebury. The overall goal was to

provide a capital improvement plan outlining costs, tasks, and timetables for achieving passenger rail service.

- The Western Corridor Transportation Management Plan (2000), which examined transportation and area development conditions and proposed investment strategies for improving the transportation investments and efficiency of the "Western corridor" of Vermont including Bennington, Rutland, Addison, Chittenden, and Franklin, VT.
- The Albany-Bennington-Rutland-Burlington (ABRB) Project, which was completed in 2004. The purpose of this study was to identify, evaluate and prioritize various railroad infrastructure improvements necessary to upgrade the ABRB corridor to meet the present and future freight and passenger rail transportation needs for the State of Vermont. As a result of this study, between North Bennington and Manchester, VT preliminary track, bridge and grade crossing rehabilitation work has been completed. Between Hoosick Junction, NY and North Bennington, VT track, bridge and grade crossing rehabilitation has also been completed.

2

Approach to the Project

Chapter 2 presents the Project Purpose and Need, Rationale, and Methodology. This chapter also describes the existing conditions in the study area, identifies the proposed alternatives, and discusses the selection process for the preferred alternative.

2.1 Project Purpose

The purpose of this project is to identify and establish an efficient, intercity passenger rail-based transportation link that will benefit un-served and underserved communities in southwestern Vermont and eastern central New York. The project would provide intercity passenger rail connections between Rutland, VT and Albany, NY, with new intercity passenger rail services in southwestern Vermont and improvements to existing intercity passenger rail services in eastern central New York State. The project would also provide a key link along Vermont's "Western Corridor", with improved connections to passenger rail services in New York and beyond via Albany and Schenectady, NY.

2.2 Project Need

The project study area of southwestern Vermont and eastern central New York has limited transportation options. This, in turn, creates limitations to mobility to, from and within the study area.

Communities within the study area have no direct access to the interstate highway system or a major airport. This condition is exacerbated by a lack of direct intercity passenger rail service and limited intercity bus service. Insufficient links between study area activity centers (residential and commercial areas, educational, medical and cultural facilities) limits

employment opportunities for residents. The result has been, and continues to be, a hardship for residents and an impediment to economic development in the region.

The lack of adequate access to the eastern half of the study area not only hinders its residents from being able to travel within the Vermont portion of the study area easily, it also acts as an impediment to attracting travelers and tourists to portions of the study area. This is a significant need because tourism plays a major role in the regional economy.

A passenger rail connection to the study area could provide an extremely attractive transportation option, based on both cost and travel time savings, for potential travelers from the New York City metropolitan area. They represent both a large pool of potential riders as well as a vast source of unrealized economic potential. Linking the entire study area to this potential buying power could stimulate significant economic development opportunities in the study area. It has the added benefit of leveraging the Albany/Rensselaer Amtrak station, which is served by frequent passenger rail service to/from New York City, into becoming a gateway to the study area.

Intercity passenger rail improvements are needed within the study area for the following reasons:

- Improved access to the eastern portion of the study area from the south beyond the study area (including Metropolitan New York) is essential to attract tourists to support the tourist industry, a key economic engine for the study area.
- Access and travel from the eastern portion of the study area to/from commercial centers, educational, medical and cultural facilities within the study area by rail is currently not an available option,
- Highway access within the eastern portion of study area is limited to a single roadway that operates as a local road for substantial portions of its length.

2.3 Project Rationale

Establishing intercity passenger rail service would improve both New York and Vermont mobility and would address the states' strategic rail transportation goals. Adding a new service through southwestern

Vermont would meet the purpose and need of the project by meeting the following goals:

- Improving access and mobility within and to/from the study area;
- Supporting economic growth and promoting sustainable, livable communities;
- Providing a cost-effective, efficient and attractive transportation option; and
- Promoting energy efficiency and improved environmental quality by providing alternatives to driving and enhancing the movement of passengers and freight throughout the region.

Goal 1: Extend Intercity Passenger Rail Access and Improve Mobility

The lack of existing intercity passenger rail services within the eastern portion of the project study area creates a missing transportation link between centers of activity including residential and commercial areas, and educational, medical and cultural facilities. This, in turn, limits employment opportunities for residents within the study area.

By establishing passenger service through southwestern Vermont, accessibility and connectivity will be improved within the study area and would make public transportation a more attractive and competitive travel option. Intercity passenger rail service would provide a new transportation choice for both residents and visitors to the region.

Goal 2: Support Economic Development and Sustainable Development

The project provides opportunities for economic development around transportation centers and throughout the region. Improved access would enhance connections to activity centers and commercial hubs for both residents and tourists. Adding passenger service through southwestern Vermont, in coordination with local land use planning, would assist Vermont and New York in meeting their goals for economic growth and promoting sustainable, livable communities.

Improved infrastructure for passenger rail service would also benefit freight rail service. The improvements would increase operating speeds and reduce in-transit time for freight trains. A more efficient freight service would also make it more competitive. Economic benefits

associated with the investment in passenger service would, therefore, be shared by all of the corridor's rail operators and business sectors throughout the region.

Goal 3: Maximize Transportation Efficiencies

The improvements recommended as part of this project would need to be cost effective and provide service that is reliable, safe, comfortable, and appealing to users. Financial resources for transportation improvements are limited, and any investment in rail facilities and services must compete with other needed public and private investments. Therefore, the costs related to the project would need to be minimized while meeting the project's goals. In addition to minimizing cost, the recommended transportation improvement would promote an increase in transportation efficiency. Transportation efficiencies could be maximized by increasing passenger and freight operating speeds thereby increasing load capacity and reliability of the rail network.

Goal 4: Protect Environmental Quality

In accordance with the Vision for the New England High-Speed and Intercity Rail Network[3], an integrated rail and transportation network would improve environmental quality by diverting cars from highways.

Using existing infrastructure reduces environmental impacts by limiting the acquisition of new right of way. The project envisions using existing infrastructure consistent with Vermont's and New York's goals to protect environmental quality. In addition, both the Vermont and New York State Rail Plans identify one of their missions as promoting environmental responsibility through environmental sustainability. All alternatives assumed existing rail infrastructure to minimize costs and maximize transportation efficiency.

2.4 Methodology

The planning analysis for this study included three major steps:

[3] Ibid.

- Documenting existing conditions and establishing a project purpose as required under the National Environmental Policy Act (NEPA) process;
- Identifying and initially screening alternatives for intercity passenger rail services that addresses the purpose and need; and
- Identifying a preferred alternative based on the analyses in the NEPA Environmental Assessment (EA).

The existing conditions section summarizes existing passenger rail and bus services in the study area. The purpose and need defines the project framework and establishes the basic mission to guide all subsequent analyses of alternatives.

The alternatives analysis included a two-tier process. An initial group of alternatives was developed to a conceptual level of detail and evaluated under a preliminary screening analysis (Phase One screening) examining a range of potential transportation, environmental, and cost factors.

The two most promising alternatives to emerge from the preliminary screening analysis were further refined and developed. The No-Build Alternative was included as the third alternative in the second-tier evaluation. In the second tier, the alternatives were defined in terms of physical and operational characteristics. An operations simulation of the alternatives was conducted. Travel demand and revenue forecasts were prepared and capital and operating and maintenance costs associated with each alternative were estimated.

Based on these data, the alternatives were vetted further. The results of this Phase Two Screening identified the Environmentally Preferred Alternative to be advanced into design.

The Environmentally Preferred Alternative represents a transportation investment that is responsive to the stated Purpose and Need.

The infrastructure and service improvements described in the Service Development Plan intend to carry the project forward to 2030. This would permit introduction of rail service to eastern central New York and southwestern Vermont to integrate well with rail improvements identified in the *Vision for the New England High-Speed and Intercity Rail Network*.

2.5 Existing Conditions

The existing transportation services available in the study area include intercity passenger rail, intercity bus service and local bus systems. A description of each service is provided in this section.

Rail Service

Intercity passenger rail service in the project study area is provided by Amtrak. There are currently three Amtrak regional routes with limited intercity passenger service in the project study area. The services are described below and shown in Figure 3.

- The Empire Service provides frequent, daily service between New York City, NY and Buffalo, NY with continuing service to Niagara Falls, NY and Toronto, Canada. The Empire Service serves two municipalities within the study area: Albany-Rensselaer and Schenectady, NY. There is no Empire Service in Vermont.
- The Adirondack service provides connections between Montreal and New York City. It makes one round trip daily. Station stops within the project study area include Whitehall, Fort Edward/Glens Falls, Saratoga Springs, Schenectady and Albany/Rensselaer, NY. Similar to the Empire Service, southwestern Vermont is not served by this route.
- The Ethan Allen service provides connections between Rutland, VT and New York City, making one round trip daily. Station stops within the project study area include Rutland, and Castleton, in Vermont, and Fort Edward/Glens Falls, Saratoga Springs, Schenectady and Albany/Rensselaer in New York. While the Ethan-Allen Express provides some coverage to portions of Vermont, Bennington County in southwestern Vermont and Rensselaer County in east-central New York have no intercity passenger rail service.

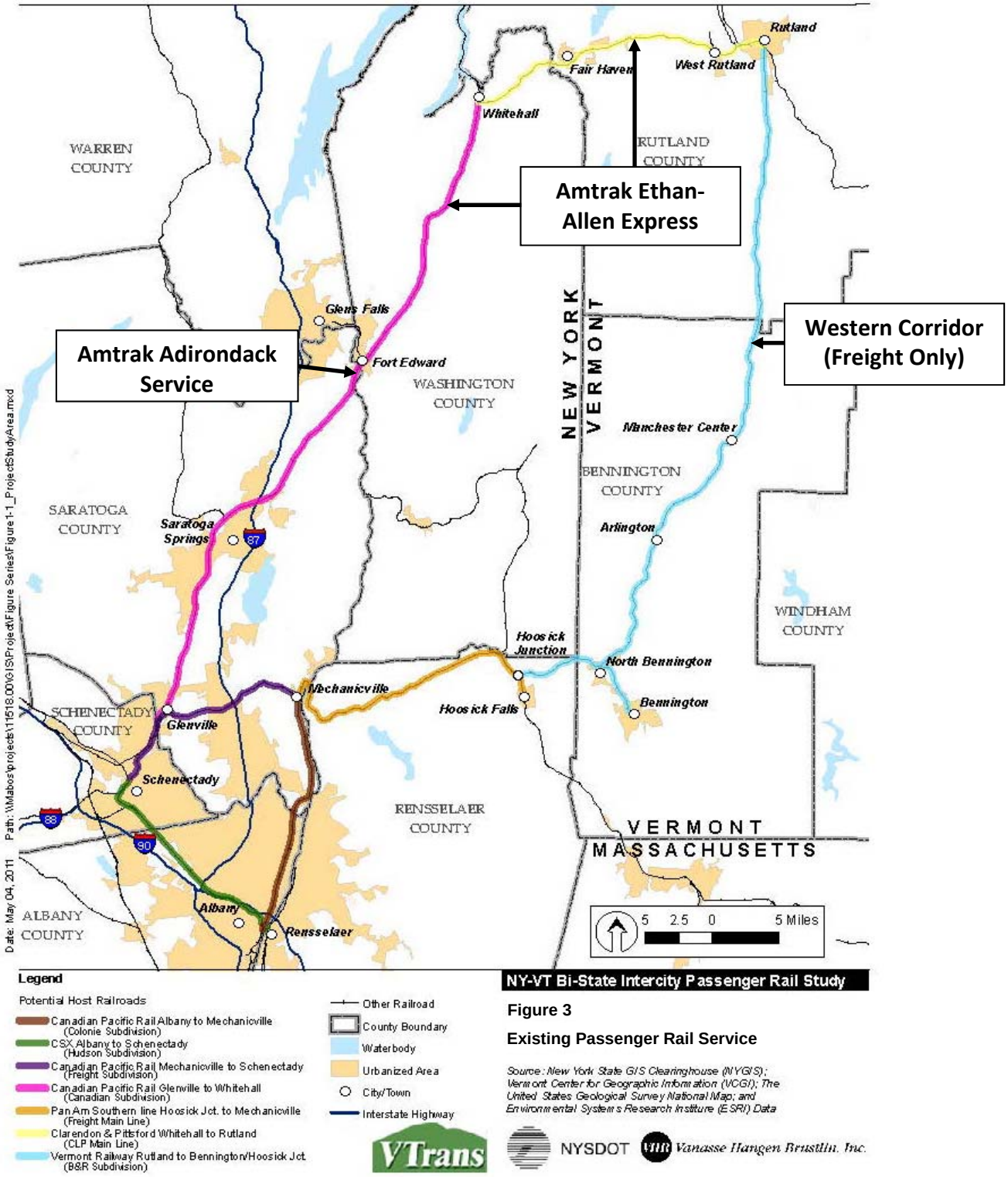


Figure 3

Existing Passenger Rail Service

Source: New York State GIS Clearinghouse (NYGIS); Vermont Center for Geographic Information (VCGI); The United States Geological Survey National Map; and Environmental Systems Research Institute (ESRI) Data

Bus Service

Within the study area, several private transportation providers operate intercity bus service. These bus services include:

- Greyhound, which operates several trips daily between New York City, NY and Montreal, Canada, with stops in Albany, Schenectady, Saratoga Springs, and Glens Falls, NY;
- Yankee Trails, which operates a regional bus route from Bennington, VT to Albany, NY, with two trips per day; and
- Adirondack Trailways, which provides regional bus service from New York City throughout New York State and into Canada, including Toronto and Montreal. Albany (including a stop at Albany International Airport), Schenectady, Saratoga Springs and Glen Falls, NY have Adirondack Trailways service through the study area.

Local bus systems serving the communities in the project study area include:

- Capital District Transportation Authority (CDTA), which provides bus service in Albany, Schenectady, Troy and Saratoga Counties in New York, and serves the rail stations at Albany/Rensselaer, Saratoga, and Schenectady, NY. CDTA also offers ShuttleFly service to Albany International Airport;
- Greater Glen Falls Transit (GGFT), which provides bus service in Warren, Washington, and Saratoga Counties in New York. GGFT also provides local feeder bus service to the Amtrak Station in Fort Edward-Glen Falls Monday through Saturday;
- Marble Valley Regional Transit District (MVRTD), also known as "The Bus", which provides bus service in Rutland County and surrounding areas in Vermont. MVRTD also operates a commuter bus service between Rutland and Manchester, VT, connection to the Green Mountain Community Network for commuters traveling between Bennington and Rutland; and
- Green Mountain Community Network, Inc. (GMCN), which provides bus services in Bennington County and surrounding areas in Vermont.

These bus systems and their routes primarily provide transportation access and connections within their service area (i.e., within a municipality or between adjacent municipalities). However, these bus

services are not well-suited towards connecting one county to another or for regional and intercity geographic coverage.

2.6 Identification/Evaluation of Alternatives

Over the course of this study, many alternatives were developed with the potential to improve the existing rail network in eastern central New York and southwestern Vermont. During Phase One, all feasible alternatives were studied to determine transportation, environmental, and cost factors. The two alternatives with the highest potential were reevaluated in a more thorough Phase Two process, and a Preferred Alternative was ultimately selected. The No-Build Alternative was also carried through the Phase Two assessment as a baseline.

No-Build Alternative

The No-Build Alternative consists of the existing transportation systems plus currently planned and programmed track and service improvements in the project study area through the long-range planning horizon (year 2030). NEPA requires the assessment of a No-Build Alternative as a baseline against which the potential effects of proposed alternatives are evaluated. The No-Build Alternative is evaluated to identify the operational and environmental effects on the study area if no action is taken. To meet this NEPA requirement, the No-Build Alternative was carried through the study's screening process so it could be compared to the final Build Alternatives. It is discussed in detail in Section 2.6.3.

Phase One Alternatives

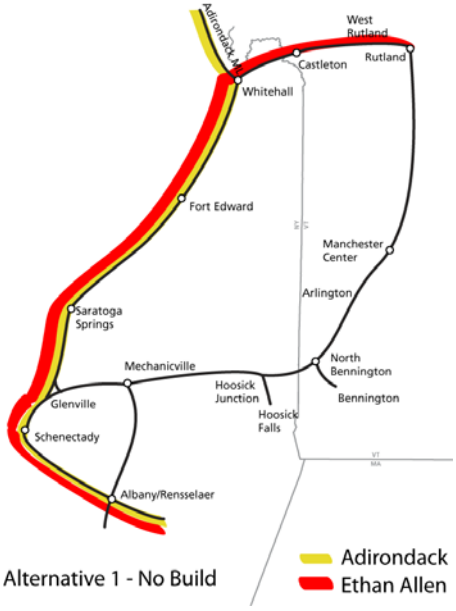
Six initial alternatives were developed for the project. These alternatives were established through a review of previous studies[4] and planning efforts as well as a collaborative workshop. The initial alternatives were broadly defined to ensure that all potentially feasible alternatives were considered and evaluated. All six of the alternatives rely on existing,

[4] Albany/Bennington/Rutland/Burlington Rail Passenger Service Study, VAT, 1998; Vermont Western Corridor Study – Report to Congress, 2000; Comparative Analysis of Transp. Needs in 4 Areas of VT (VT Transp. Board), 2004;Albany/Bennington/Rutland/Burlington Project, VTrans, 2004; VT State Rail & Policy Plan, 2006; NY State Rail Plan, 2009; Vision for the New England HSR and Intercity Rail Network, 2009; NY-VT HISPR Track 3 Application , 2009; Ethan Allen HSIPR Track 2 Application, 2009; Vermont Western Corridor Management Plan – Report to Congress, 2010; Projected Improvements to the Vermont Railway Western Corridor, 2010

active rail lines within the study area. These rail lines are primarily used for the movement of freight.

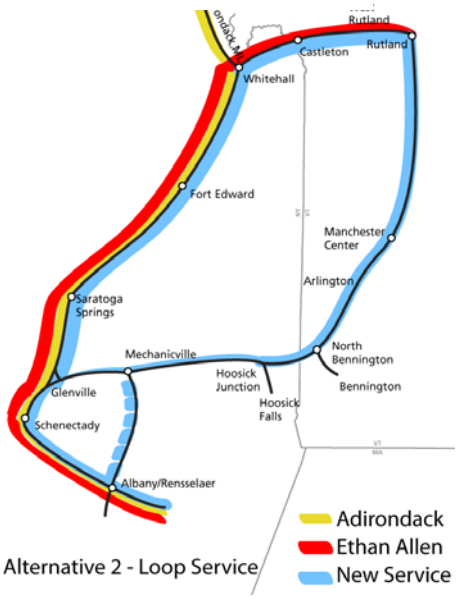
The Phase One Alternatives, screening process, and results are discussed in detail in the Identification and Evaluation of Alternatives – Phase One technical memorandum, which can be found in Appendix A. The Phase One alternatives included:

Figure 4 Alternative 1 - No Build



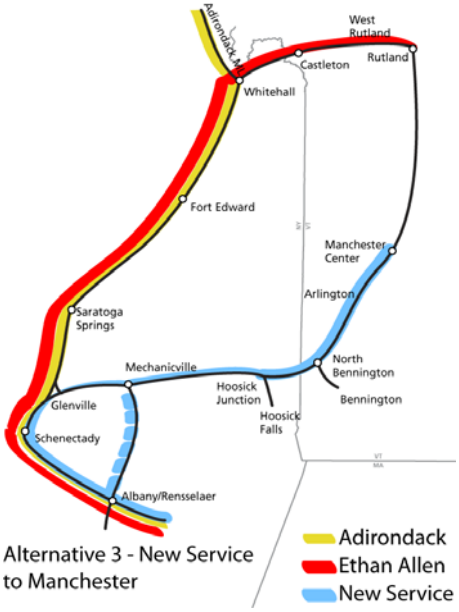
Alternative 1 – No-Build. The No-Build Alternative, shown in Figure 4, consists of the existing transportation systems plus the currently planned and programmed track and service improvements in the project study area through the long-range planning horizon (year 2030).

Figure 5 Alternative 2 - Loop Service



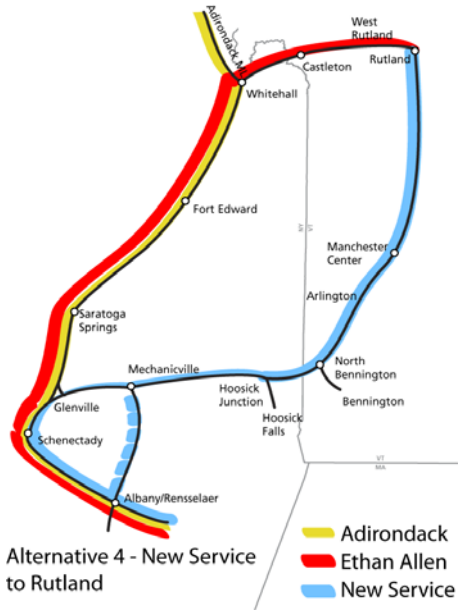
Alternative 2: Loop Service. This alternative, shown in Figure 5, proposed a "loop" service connecting stations in Albany/Rensselaer, Mechanicville, Schenectady, Saratoga Springs, and Fort Edward/Glen Falls, NY to Castleton, Rutland, Manchester, and North Bennington, VT.

Figure 6 Alternative 3 - New Service to Manchester



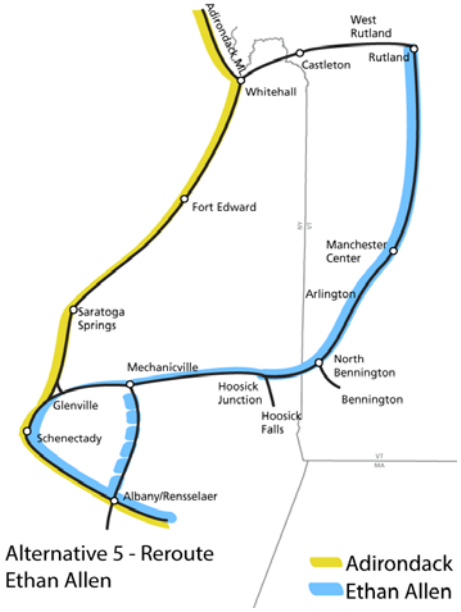
Alternative 3: New Service to Manchester. Alternative 3, shown in Figure 6, proposed a new service to southwestern Vermont, with a terminus in Manchester. Service would be extended from the Albany/Rensselaer station to new stations in Mechanicville, NY and North Bennington and Manchester, VT with one round trip per day.

Figure 7 Alternative 4 - New Service to Rutland



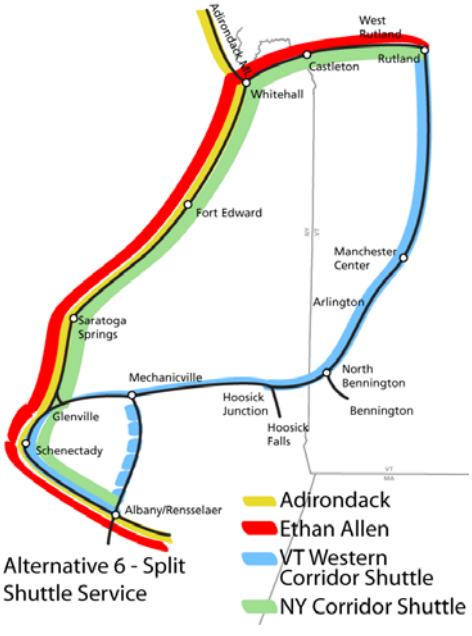
Alternative 4: New Service to Rutland. Alternative 4, shown in Figure 7, would extend service to southwestern Vermont, with a terminus in Rutland, VT. This alternative would operate from Albany/Rensselaer station connecting to new stations in Mechanicville, NY and North Bennington and Manchester, VT and terminating in Rutland, VT.

Figure 8 Alternative 5 – Reroute Ethan Allen



Alternative 5: Rerouted Ethan Allen Service. Alternative 5, shown in Figure 8, proposed re-routing the existing Ethan Allen service through southwestern Vermont. Under this alternative, the Ethan Allen service would operate between Rutland, VT and Albany/Rensselaer, NY, with stops in Mechanicville, NY and North Bennington and Manchester, VT.

Figure 9 Alternative 6 - Split Shuttle Service



Alternative 6: Split Shuttle Service. This alternative, shown in Figure 9, proposed creating a "shuttle" service connecting Albany/Rensselaer, NY and Rutland, VT via two routes. The termini for both routes would be Albany/Rensselaer to the south and Rutland to the north end. One shuttle would make intermediate stops in Mechanicville, NY and North Bennington and Manchester, VT. The other shuttle service would follow the same route as the existing Ethan Allen service, making stops at Castleton, VT and Fort Edward/Glen Falls, Saratoga Springs and Schenectady, NY. Each shuttle service would operate on one side of the loop and provide round-trip service.

The Phase One Screening was conducted to evaluate how well the alternatives satisfy the Project Purpose and Need. Their basic feasibility was also assessed. To that end, four criteria from the Project Purpose and Need were used to evaluate the six initial alternatives. These are:

- Rail Access and Mobility
- Economic/Sustainable Development
- Transportation Efficiencies
- Environmental Quality

Order of magnitude capital cost, operations and maintenance (O&M) cost estimates and ridership forecasts were developed to support the evaluation.

Based on the results of the Phase One Screening, two Build Alternatives were recommended to advance to the Phase Two Screening process:

- Alternative 4 – New Service to Rutland
- Alternative 5 – Rerouted Ethan Allen Service

The No-Build Alternative and the two Build Alternatives that advanced from the Phase One screening were further refined in terms of operating plans, operational analysis and capital and operating/maintenance costs. In addition, each alternative was developed to a level of detail needed to support the Environmental Analysis to satisfy NEPA.

Phase Two Alternatives

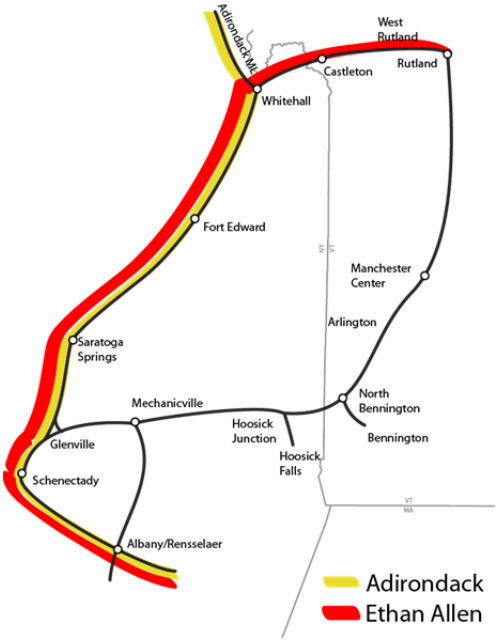
The focus of the Phase Two analyses and screening process was to identify the Preferred Alternative for the project. In the Phase Two Screening, the No-Build Alternative and Alternatives 4 and 5 were evaluated in terms of:

- Capital costs;
- Operations and maintenance costs;
- Ridership estimates;
- Operational Analysis/Operating Plans; and
- Environmental impacts.

Based on the compiled analyses, a detailed assessment of each alternative was performed as part of the Phase Two screening. The Phase Two Alternatives, screening process, and results are discussed in detail in the Identification and Evaluation of Alternatives – Phase Two technical memorandum, which can be found in Appendix B.

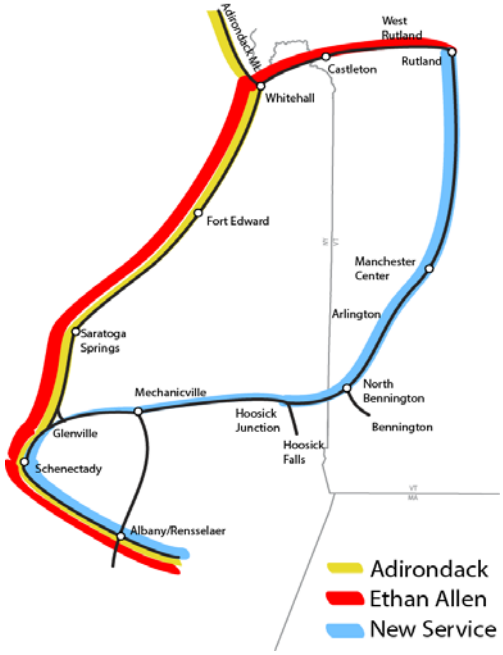
Each of the Phase Two alternatives are described and illustrated below.

Figure 10 No-Build Alternative



The No-Build Alternative includes the existing transportation systems plus currently planned and programmed track and service improvements in the project study area through the long-range planning horizon (year 2030). The National Environmental Policy Act (NEPA) requires including the No-Build Alternative in the evaluation of alternatives. It is evaluated to identify the operational and environmental effects on the study area if no action is taken. To meet this NEPA requirement, the No-Build Alternative was advanced to this second phase of the screening process so it can be compared to the final Build Alternatives. Figure 10 provides a schematic drawing of the No-Build Alternative.

Figure 11 Alternative 1 - New Service to Rutland



Alternative 1 (formerly Alternative 4 under the Phase One Screening) would extend service to southwestern Vermont, with a terminus in Rutland, VT. Figure 11 is a schematic map of the New Service to Rutland Alternative.

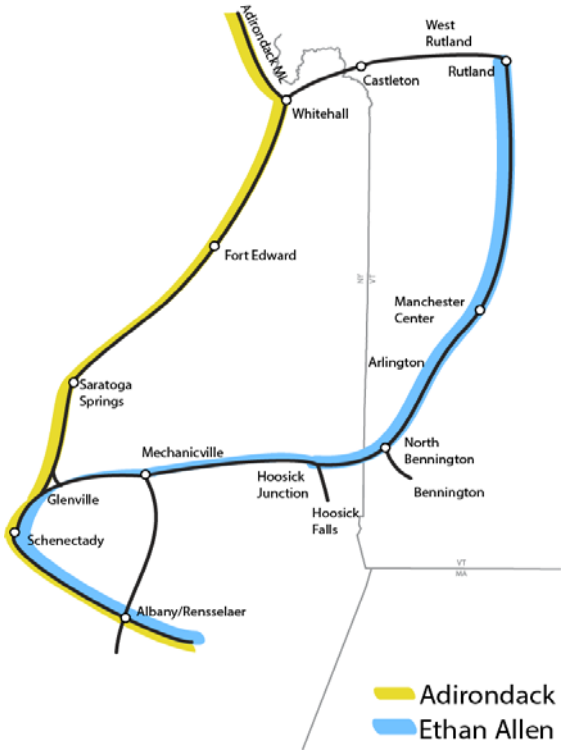
The alternative would operate out of Albany/Rensselaer, NY station connecting to new stations in Mechanicville, NY and North Bennington and Manchester, VT, en route to a terminus in Rutland, VT. Alternative 1 would operate one round trip per day.

Alternative 1 proposes a through service, with no transfer needed for service beyond Albany/Rensselaer, NY, along the Empire Corridor. To operate Alternative 1 as a through service, it is proposed that an existing Empire Corridor train that

currently terminates at Albany/Rensselaer, NY be extended to Rutland, VT.

In Alternative 1 the Ethan Allen and Adirondack services would continue to operate on the same routes and frequencies (one round trip per day for both) as they do now. Alternative 1 would provide new service to Mechanicville, NY and North Bennington and Manchester, VT.

Figure 12 Alternative 2 - Reroute Ethan Allen



Alternative 2 (formerly Alternative 5 under the Phase One Screening) proposes re-routing the existing Ethan Allen service through southwest Vermont. The alternative would operate between Rutland, VT and Albany/Rensselaer, NY through southwest Vermont with stops in Mechanicville, NY and North Bennington and Manchester, VT. Figure 12 is a schematic map of the Rerouted Ethan Allen Service Alternative.

Alternative 2 also proposes a through service, to New York City. Similar to existing Ethan Allen Service, no transfer would be needed for service beyond Albany/Rensselaer, NY along the Empire Corridor.
As part of Alternative 2, the existing Adirondack service would continue to operate on the same route and at the same frequency (one round trip per day) as it does now. The rerouted Ethan Allen service would operate one round trip per day.

With this alternative, service to Castleton, VT would be eliminated while service to Mechanicville, NY and North Bennington and Manchester, VT would be added. This alternative would reduce service to one train per day in each direction (Adirondack service only) at Saratoga Springs and Fort Edward.

Alternatives 1 and 2 were weighed against one another by using the four goals established in the Project Rationale in Section 2.3. The goals are:

- Goal 1: Improving access and mobility in the region;
- Goal 2: Supporting economic growth and sustainable development;
- Goal 3: Providing an efficient and attractive transportation option; and
- Goal 4: Promoting energy efficiency and enhanced environmental quality.

The No-Build Alternative was used as a baseline from which to draw conclusions. Table 1 breaks down the evaluation of each alternative by goal and reveals the following trends:

- Both Build Alternatives propose adding service in the Western Corridor of Vermont, but ***Alternative 1 best satisfies Goal 1*** because it adds service to new segments of the study area without removing service from any existing station areas. Under Alternative 2, service would still be available along much of the existing Ethan Allen alignments – via the Adirondack Service; however, there would be one less roundtrip available for portions of the current Ethan Allen alignment. Castleton will no longer be served directly by passenger rail.
- ***Alternatives 1 best satisfies Goal 3***, and is anticipated to slightly better support economic development and sustainable development. The major driver for both of these objectives will be the placement of new stations, which will be the same for both Alternatives. The removal of one round trip, as is proposed under Alternative 2, may have some negative impact to economic development at the stations where service is reduced.
- ***Alternative 2 best satisfies Goal 2***, due in major part to the cost difference associated with running two services (Alternative 1) versus one service (Alternative 2). Alternative 2 outperforms both the No-Build and Alternative 1 in terms of the net cost per rider and the subsidy that would be required to support the service.
- Both Alternative 1 and 2 are expected to have a similar (minimal) impact on the environment. It should be noted that both Build alternatives would also have potential for reduced traffic and improved air quality due to a reduction in annual VMT.

Table 1 – Evaluation Summary Table	No-Build	Alt. 1: New Service to Rutland	Alt.2: Reroute Ethan Allen
Goal 1: Extend Intercity Passenger Rail Access and Improve Mobility			
Directness/Travel Time to Key Regional Destinations: • Directness of the trip to key regional destinations.	Train access is provided to regional destinations in the New York portion of the study area only (along the Ethan Allen corridor).	Train access is provided to regional destinations in both New York (Adirondack and Ethan Allen) and in the Western Corridor of Vermont (New Service).	Train access is provided to regional destinations in both New York (Adirondack) and in the Western Corridor of Vermont (rerouted Ethan Allen).
• Transfers required	Required for access to Western Corridor	No transfers required.	Requires a transfer at Rutland to get to Castleton.
• Cumulative travel time (Schenectady to study area stations)	*Schenectady to:* Rutland 2:24 Manchester N/A North Bennington N/A Mechanicville N/A Fort Edward 0:46 Saratoga Springs 0:26 Castleton 2:00	*Schenectady to:* Rutland 2:21 Manchester 1:40 North Bennington 1:14 Mechanicville 0:37 Fort Edward 0:46 Saratoga Springs 0:26 Castleton 2:00	*Schenectady to:* Rutland 2:21 Manchester 1:40 North Bennington 1:14 Mechanicville 0:37 Fort Edward 0:50 Saratoga Springs 0:28 Castleton N/A
Availability of Intermodal Connections: • Presence of intermodal connections at each station.	**Train:** Connections to other routes at 4 stations in the study area. **Local Bus:** Connections at 6 stations. **Regional Bus:** Connections at 3 stations.	**Train:** Connections to other routes at 5 stations in the study area. **Local Bus:** Connections at 9 stations. **Regional Bus:** Connections at 3 stations.	**Train:** Connections to other routes at 2 stations in the study area. **Local Bus:** Connections at 8 stations. **Regional Bus:** Connections at 3 stations.

Table 1 (continued)	No-Build	Alt. 1: New Service to Rutland	Alt.2: Reroute Ethan Allen
Frequency/Ridership[5]/ Population within 10-mile Radius of study area stations (2010 Census)	1 train per day. Total ridership: 88,200 Population: 905,700	1 train per day on each route. Total ridership: 126,000 Population: 1,069,873 (18% increase)	1 train per day. Total ridership: 104,100 Population: 1,038,640 (15% increase)
Goal 2: Support Economic Development and Sustainable Development			
Accessibility/Connections to Employment • Connections to major employers	Provides connections between Rutland and major employers in the Albany Capitol District	Provides connections between Rutland, Manchester and Bennington and major employers in the Albany Capitol District	Provides connections between Rutland, Manchester and Bennington and major employers in the Albany Capitol District
• Allow access without needing a car	Provides transit access between Rutland, Albany Capitol District, and New York City	Provides transit access between Rutland, Manchester, Bennington and Albany Capitol District, and New York City	Provides transit access between Rutland, Manchester, Bennington, Albany Capitol District, & New York City
Accessibility/Connections to Institutional Services	Provides access between Rutland and institutional services in the Albany Capitol District and New York City	Provides access between Rutland, Manchester and Bennington and institutional services in the Albany Capitol District and New York City	Provides access between Rutland, Manchester and Bennington and institutional services in the Albany Capitol District and New York City
Accessibility/Connections to Regional Attractions and Tourist Destinations	Provides access to regional attractions and destinations in the vicinity of Rutland	Provides access to regional attractions and destinations in the vicinity of Rutland, Manchester and Bennington	Provides access to regional attractions and destinations in the vicinity of Rutland, Manchester and Bennington

[5] Ridership numbers reflect one-way boardings with one trip end associated with a station in the study area.

Table 1 (continued)	No-Build	Alt. 1: New Service to Rutland	Alt.2: Reroute Ethan Allen
Opportunities for Smart Growth/Economic Development and Support of Transit Oriented Development (TOD)	Opportunities present in the vicinity of existing stations	Opportunities present in the vicinity of existing stations and new stations, if new stations are located in downtown areas	Opportunities present in the vicinity of existing stations and new stations, if new stations are located in downtown areas
Goal 3: Maximize Transportation Efficiencies			
Capital Cost	$0	$112,244,000	$112,244,000
Annual Operations and Maintenance Cost	$6,297,000	$11,748,000	$6,889,000
Annual Revenue	$2,950,000	$4,431,000	$3,714,200
Net Operating Cost per Rider	$33.34	$69.61	$29.52
Constructability • Impact on the operation of existing freight and passenger rail services during construction.	No additional impact.	No major impacts are anticipated to existing freight or passenger rail operations during construction.	No major impacts are anticipated to existing freight or passenger rail operations during construction.
Sustainability/Funding Opportunities • Financially sustainable.	No change from existing.	Highest O&M costs due to operating two services. 117 percent increase in annual train miles vs. 43 percent increase in ridership (revenue).	17 percent increase in annual train miles vs. 18 percent increase in ridership (revenue).

Table 1 (continued)	No-Build	Alt. 1: New Service to Rutland	Alt.2: Reroute Ethan Allen
Funding and cost-sharing opportunities	VTrans is the sponsoring agency for the Ethan Allen (EA) service. VTrans splits the annual O&M subsidy with NYSDOT based on each state's portion of the total train miles. EA: 44 miles (VT), 56 miles (NY) $1,473,000 (VT), $1,874,000 (NY)	VTrans would be the sponsoring agency for new service, but could negotiate with NYSDOT on splitting the state's portion of the annual O&M subsidy by train miles per state. EA: 44 miles (VT), 56 miles (NY) New Service: 82 miles (VT), 35 miles (NY) $4,235,000 (VT), $3,083,000 (NY)	VTrans would be the sponsoring agency for the rerouted Ethan Allen (EA) service. Since this alternative primarily benefits Vermont, VTrans would be responsible for 100% of the annual O&M subsidy. Rerouted EA: 117 miles (VT), 0 miles (NY) $3,175,000 (VT), $0 (NY)
Additional Capacity Train Miles (annual)	73,000	158,410	85,410
Seat Miles[6] (annual)	16,352,000	117% increase over No-Build	17% increase over No-Build
Revenue Vehicle Hours	6.17 hr/day*365= 2,250	(6.17(EA)+5.47(New))*365=4,249	5.47hr/day*365= 1,996
• Operational flexibility	No additional operational flexibility over existing condition.	Provides the opportunity, in the event of a disruption, to get trains from Rutland to Albany via two routes (redundant routes).	No additional operational flexibility over existing condition.
• Costs of improvements to ensure reliability	None	$10,973,000	$10,973,000

[6] Assumes 4-car trainset for each alternative (2 coaches, 1 business class, 1 club dinette=224 seats).

Table 1 (continued)	No-Build	Alt. 1: New Service to Rutland	Alt.2: Reroute Ethan Allen
Impact on Bus Operations	None	Minor rerouting to access rail stations	Minor rerouting to access rail stations
Impacts to Existing Passenger Rail Operations	None	Extension of one Empire Corridor trainset	Relocation of Ethan Allen service to Western Corridor
Impacts to Freight Operations	None	Improvement in track and sidings	Improvement in track and sidings
Goal 4: Protect Environmental Quality			
Land Use • Current land uses within the study area	No effect on existing land uses	No effect on existing land uses	No effect on existing land uses
• Support for planned land uses	Supports current land use	Consistent with Rutland and Bennington County Regional Plans for economic development	Consistent with Rutland and Bennington County Regional Plans for economic development
Displacement and Relocation Requirements	No displacements or relocations	No displacements or relocations. Minor land acquisition (of undeveloped land) required for new stations.	No displacements or relocations. Minor land acquisition (of undeveloped land) required for new stations.
Environmental Justice	No effects on low income or minority populations	No effects on low income or minority populations	No effects on low income or minority populations
Impacts to Historic or Architectural Resources	No effects on historic or architectural resources	No effects on historic or architectural resources [pending review of new station locations]	No effects on historic or architectural resources [pending review of new station locations]
Impacts to Section 4(f) Properties	No effects to Section 4(f) properties	No effects to Section 4(f) properties	No effects to Section 4(f) properties

Table 1 (continued)	No-Build	Alt. 1: New Service to Rutland	Alt.2: Reroute Ethan Allen
Traffic Impacts	No significant change anticipated.	Potential decrease in traffic due to mode switch from cars to rail for trips to/from newly served stations.	Potential decrease in traffic due to mode switch from cars to rail for trips to/from newly served stations.
Noise and Vibration Impacts	Existing noise and vibration impacts from passenger and freight rail traffic would continue.	Potential minor increases in noise and vibration along existing passenger rail routes. Potential to increase noise and vibration impacts at sensitive receptors close to the right-of-way along the western corridor.	Potential to increase noise and vibration impacts at sensitive receptors close to the right-of-way along the western corridor. Potential decrease in noise and vibration along segment from Whitehall to Rutland if Ethan Allen service is rerouted.
Other Factors			
Public Support	TBD	TBD	TBD
Project Schedule Risk • Prerequisite projects	None	None	None
• Approvals needed	None	FRA, NY and VT, Pan Am, CP	FRA, NY and VT, Pan Am, CP

Scoring the Alternatives

Based on the compiled data and analyses, a detailed point-based assessment of each alternative was performed as part of the Phase Two screening. The alternatives were evaluated against each of the criteria described below and are scored on a scale of +2 (alternative is expected to have a significantly favorable impact), to -2 (alternative is expected to have a significantly unfavorable impact) in each category. All criteria were weighed equally and the scores for each of the criteria used to evaluate the alternatives were summarized to produce a composite score for each goal and a best fit alternative was identified for each goal. Table 2 includes the project goals, the evaluation criteria, and a summary of the evaluation scores for the Phase Two screening process.

As shown in Table 2, Alternative 1 has the highest total score (+13). Alternative 1 provides the greatest transportation benefit by adding new service along the Western Corridor without eliminating or reducing service on other routes.

Based on this Phase Two evaluation, Alternative 1 is the Preferred Alternative recommended for further development.

Table 2 –Summary of Evaluation Scores

	No-Build	Alt. 1	Alt. 2
GOAL 1 – Extend Intercity Passenger Rail Access and Improve Mobility			
Directness to Key Regional Destinations	0	+2	+1
Transfers Required	0	+2	+1
Cumulative Travel Time	0	0	0
Availability of Intermodal Connections	0	+2	+1
Frequency/Ridership/Population	0	+2	+1
Goal 1 Total:	*0*	*+8*	*+4*
Best Fit Alternative:		X	
GOAL 2 – Support Economic Development and Sustainable Development			
Accessibility/Connections	0	+2	+2
Smart Growth	0	+2	+1
Goal 3 Total:	*0*	*+4*	*+3*
Best Fit Alternative:		X	
GOAL 3 – Maximize Transportation Efficiencies			
Cost Evaluation	0	-2	+2
Construction Impacts on Operations	0	-1	-1
Sustainability/Funding Opportunities	0	-1	0
Additional Capacity	0	+2	+1
Reliability/Flexibility	0	+2	+1
Impacts to Rail and Bus Operations	0	+2	+1
Goal 2 Total:	*0*	*+2*	*+6*
Best Fit Alternative:			X
GOAL 4 – Protect Environmental Quality			
Environmental Impacts	0	-1	-1
Goal 4 Total:	*0*	*-1*	*-1*
Best Fit Alternative:	Alternatives 1 & 2 tie		
TOTAL	0	+13	+10
Best Fit Alternative:		X	

Level of Public Involvement

The study included a robust public outreach program to engage and involve the public at key points throughout the study process, including public meetings, email blasts, a project website and other forms of outreach, as appropriate. The public outreach process is discussed in detail in the Public Involvement Plan technical memorandum.
Key elements of the program included:

Project Management Team (PMT)

The PMT provided oversight, direction, and review for the study. Staff from the following government agencies served on the PMT:

- Vermont Agency of Transportation (VTrans)
- New York State Department of Transportation (NYSDOT)
- Rutland Regional Planning Commission (RRPC)
- Bennington County Regional Commission (BCRC)

Stakeholder Committee

The Stakeholder Committee provided input to the study, including the vetting of the early alternatives analysis. The committee was convened to discuss specific topics as well as at major study milestones. The Stakeholder Committee was comprised of the following groups:

- Federal and State Agencies:
  - Federal Railroad Administration (FRA)
  - Capital District Transportation Committee (MPO)
  - Adirondack/Glens Falls Transportation Council (MPO)

- Railroad Owners and Operators:
  - Pan Am Railways (PanAm)
  - Vermont Rail Systems (VRS)
  - Canadian Pacific Rail (CP)
  - CSX
  - Amtrak

- Rail Interest Groups:
  - Vermont Rail Action Network (VRAN)
  - Empire State Passenger's Association (ESPA)
  - Rutland Railway Association
  - Friends of Rutland Rail
  - Southwestern Vermont Rail Corridor Steering Committee

In addition, face-to-face interview/meetings with key stakeholders from relevant agencies and jurisdictions were held during in the study process.

Public Meetings

At key project milestones, public meetings were held at various locations within the study area, balancing meetings between key locations within New York State and Vermont.

Website

A study website was established to allow the following activities:

- Follow the progress of the study and provide regular updates;
- Advertise meetings;
- Provide links to other area organizations and studies;
- Provide access to minutes of meetings and technical documents;
- Allow people to make comments and ask questions.

The Study Team used diverse methods to communicate with and involve the public, including newsletters, media outreach, and CMART® (Comment Management and Response Tool).

3

Service and Operating Plan

Chapter 3 describes the operations analysis and presents the results of thee simulation.

3.1 Operations Simulation

The Rail Traffic Controller TM (RTC) software model's Train Performance Calculator (TPC) was used to simulate one northbound and one southbound train between Albany and Rutland along the proposed route. The TPC runs are discussed in detail in the Summary of Simulation Assumptions and TPC Results technical memorandum, which can be found in Appendix C.

3.2 Rail Infrastructure Characteristics and Infrastructure Modifications

The preferred route would travel from Albany/Rensselaer, NY to Rutland, VT and includes containing four segments each owned by a different railroad. The RTC model included proposed improvements along each segment of the corridor.

The information and assumptions used to build each railroad segment of the model's database are summarized in the following sections.

CSX (With Amtrak as Lessor) – Albany/Rensselaer to Schenectady

In the RTC model, this segment was coded based on the infrastructure proposed for two committed, Amtrak-managed capital projects: the Albany/Rensselaer Station 4th Track Project (including an additional high-level platform at that location) and the Albany–Schenectady Double Track Project (including upgraded speeds). Plans included all the information needed for track and signal infrastructure locations, switch and crossover information, speeds, grades, and signal aspects.

CP – Schenectady to Mechanicville

In the RTC model, this segment was coded based on track charts of the Freight Main Subdivision provided by CP. The track charts included the track and signal infrastructure, speed, and grade information. However, they did not include stationing for the infrastructure locations or changes in speed or grade. For the model, as directed by CP, these locations were estimated based on the mileposts on the track chart and measurements in Google Earth.

Since track charts did not include information on switches or crossovers, CP directed the project team to assume the following switch numbers and types as input into the RTC model:

- Main line switches were set as #15 dual-control power switches;
- Turnout switches for industrial tracks or yard leads off a main track were set as #10 manual switches with electric locks; and
- Switches for yard tracks were set as #10 manual switches without locks.

No signal aspects were provided for this segment of track. As directed by CP, signal aspects and the trailing signal settings were generated and assumed for the purposes of the RTC Model.

The aspects were based on the signal aspect definitions included in the CP timetable as well as track speed and geometry.

CP also provided a schematic of the newly installed Mechanicville Yard track infrastructure. This schematic provided the interlocking switch and crossover numbers, but did not include stationed locations of the interlocking track infrastructure or signal infrastructure information. For

the model, as directed by CP, these locations were estimated based on the mileposts on the track chart and measurements in Google Earth.

The model also included proposed changes to the infrastructure derived from track drawings developed as part of this project. These changes involve enhancing the interlockings that are northeast of Mohawk Yard, namely CP477 and CP478. This includes installing additional crossovers, relocating other crossovers, and removing certain track segments affected by this work. The effect of the new alignment of the infrastructure results in greater capability for parallel moves.

Pan Am – Mechanicville to Hoosick Jct.

In the RTC model, this segment was built based on the track charts of the Freight Main Line provided by Pan Am. The track charts included the track and signal infrastructure, speed, and grade information; however they did not include stationing for the infrastructure locations or changes in speed or grade. For the model, these locations were estimated based on the mileposts on the track charts and measurements in Google Earth.

The track charts also did not include information on switches or crossovers. For the purposes of the RTC model switch numbers and types were assumed to be:

- Main line switches were set as #15 dual control power switches;
- Turnout switches for industrial tracks or yard leads off a main track were set as #10 manual switches with electric locks; and
- Switches for yard tracks were set as #10 manual switches without locks.

No signal aspects were provided for this segment of track. Signal aspects and the trailing signal settings were assumed for the purposes of the RTC Model. The aspects were based on the signal aspect definitions included in the Pan Am timetable as well as track speed and geometry. The model also includes proposed changes to the infrastructure including three proposed control sidings:

- An 8,000 foot siding located approximately 1.5 miles east of CP478;
- An 8,000 foot siding located approximately 4 miles east of Mechanicville; and
- A 10,000 foot siding located approximately 1.5 miles west of Hoosick Junction (CPF448).

The RTC model did not include the track and infrastructure changes being constructed as part of one committed project, the joint Pan Am/ Norfolk Southern Intermodal Yard in Halfmoon/ Mechanicville.

VRS – Hoosick Jct. to Rutland

This segment of the model was built based on the track charts of the Hoosick Main and B&R Main provided by VRS. The track charts included the track infrastructure and speeds; however, they did not include stationing for the track infrastructure locations or changes in speed. For the model, these locations were estimated based on the mileposts on the track chart.

The track charts also did not include information on switches or crossovers. For the purposes of the RTC model, switch numbers and types were assumed as:

- Main line switches were set as #10 dual control power switches;
- Turnout switches for industrial tracks or yard leads off a main track were set as #10 manual switches with electric locks; and
- Switches for yard tracks were set as #10 manual switches without locks.

The track charts provided included grade information, which was input into the model accordingly. Signal information was not provided on track charts or aspect charts; however this information is not necessary for the TPC runs.

The model also includes proposed changes to the infrastructure including:

- A 4,000 foot siding roughly three miles west of North Bennington; and
- A 3,500 foot-siding roughly 13.5 miles north of Manchester and 18 miles south of Rutland. The above siding represents a lengthening and relocation of an existing siding with hand throw switches.

3.3 TPC Inputs and Results

TPC runs were performed between Albany and Rutland in each direction. The train set used included one P42-DC locomotive pulling five coach cars. Tables 3 and 4 show the existing schedules for Amtrak Adirondack and Ethan Allen Express service used in the TPC runs. Table 5 compares run times between the existing Amtrak Ethan Allen Express service between Albany and Rutland and the proposed service.

Table 3 - Adirondack Schedule

68	◂ Train Number ▸					69
Daily	◂ Normal Days of Operation ▸					Daily
R	◂ On Board Service ▸					R
Read Down	Mile			Symbol		Read Up
9 30A	0	Dp	Montréal, QC–Central Station	●♿ 11	Ar	7 06P
R9 45A	4	↓	St. Lambert, QC	●♿ 11	↑	D6 52P
	48	↓	CBSA Lacolle, QC–Customs Stop	🛃	↑	23 5 36P
14 11 05A 12 05P	49	Ar Dp	Rouses Point, NY	○🛃	Dp Ar	L4 00P
12 35P	72	↓	Plattsburgh, NY	○	↑	3 12P
52	85	↓	Port Kent, NY 52 (Burlington, VT 🚌)	○	↑	52
1 40P	112	↓	Westport, NY 🚌 Lake Placid—see right	○	↑	2 08P
2 04P	123	↓	Port Henry, NY (Lake George)	○	↑	1 39P
2 28P	140	↓	Ticonderoga, NY	○	↑	1 17P
3 00P	162	↓	Whitehall, NY	○	↑	12 44P
3 25P	184	↓	Fort Edward-Glens Falls, NY 🚌 Lake George Village 93	○	↑	12 19P
3 48P	203	↓	Saratoga Springs, NY	●♿	↑	11 57A
4 45P	222	↓	Schenectady, NY	●♿QT	↑	11 29A
5 15P 5 40P	240	Ar Dp	Albany-Rensselaer, NY	●♿QT	Dp Ar	11 05A 10 50A
6 05P	268	↓	Hudson, NY	●♿QT	↑	10 20A
6 26P	293	↓	Rhinecliff, NY	●♿QT	↑	10 00A
6 45P	309	↓	Poughkeepsie, NY	○♿QT	↑	9 46A
7 25P	349	↓	Croton-Harmon, NY	○♿QT	↑	9 03A
7 46P	367	↓	Yonkers, NY	○♿	↑	8 44A
8 20P	381	Ar	New York, NY–Penn Station	●♿QT	Dp	8 15A
R187/167/123	Connecting Train at New York					R150/110*
9 05P	381	Dp	New York, NY–Penn Station	●♿QT	Ar	6 40A
9 21P	391	Ar	Newark, NJ	●♿QT	↑	6 22A
10 02P	439	↓	Trenton, NJ	●♿QT	↑	5 44A
10 30P	472	↓	Philadelphia, PA–30th St. Sta.	●♿QT	↑	5 15A
10 53P	497	↓	Wilmington, DE	●♿QT	↑	4 50A
11 41P	566	↓	Baltimore, MD–Penn Station	●♿QT	↑	3 54A
11 55P	577	↓	BWI Marshall Airport, MD ✈	●♿QT 10	↑	3 39A
D12 10A	598	↓	New Carrollton, MD	●♿QT	↑	
12 29A	607	Ar	Washington, DC	●♿QT	Dp	3 15A

Source: www.amtrak.com

Table 4 - Ethan Allen Express Schedule

290	292	296	Train Number					291	293
Mo-Fr	Sa	Su	Normal Days of Operation					Sa-Th	Fr
	1/19,2/16, 5/25	1/20,2/17	Will Also Operate						
1/20,2/17, 5/26		1/19,2/16	Will Not Operate						
R B	R B	R B	On Board Service					R B	R B
Read Down			Mile			Symbol		Read Up	
8 00A	11 00A	5 05P	0	Dp	Rutland, VT		Ar	8 48P	11 13P
8 19A	11 19A	5 24P	9		Castleton, VT			L8 24P	L10 49P
9 16A	12 15P	6 25P	44		Fort Edward-Glens Falls, NY Lake George Village 93			7 10P	9 35P
9 37A	12 36P	6 47P	63		Saratoga Springs, NY			6 50P	9 15P
10 23A	1 15P	7 28P	82		Schenectady, NY			6 24P	8 49P
10 53A 11 15A	1 45P 2 15P	7 53P 8 15P	100	Ar Dp	Albany-Rensselaer, NY		Dp Ar	6 00P 5 45P	8 25P 8 15P
11 40A	2 40P	8 40P	128		Hudson, NY			5 15P	L7 50P
12 01P	3 00P	9 01P	153		Rhinecliff, NY			4 55P	L7 30P
12 15P	3 15P	9 15P	169		Poughkeepsie, NY			4 41P	7 16P
12 55P	3 55P	9 55P	209		Croton-Harmon, NY			3 58P	6 30P
1 16P	4 16P	10 16P	227		Yonkers, NY			3 39P	
1 50P	4 50P	10 50P	241	Ar	New York, NY–Penn Station		Dp	3 15P	5 47P
R85	R135	R67	Connecting Train at Penn Station					R82/154/174	R186
3 05P	6 05P	3 00A	241	Dp	New York, NY–Penn Station		Ar	1 44P	4 30P
3 21P	6 21P	3 15A	251	Ar	Newark, NJ			1 26P	L4 09P
3 53P	7 02P	4 01A	299		Trenton, NJ			12 46P	3 29P
4 27P	7 30P	4 35A	332		Philadelphia, PA–30th St. Station			12 16P	3 00P
4 49P	7 53P	5 04A	357		Wilmington, DE			11 51A	2 36P
5 40P	8 48P	5 58A	426		Baltimore, MD–Penn Station			11 04A	1 45P
6 25P	9 35P	6 57A	467	Ar	Washington, DC		Dp	10 20A	1 02P

Source: www.amtrak.com

Table 5 – Comparison of Run Times

Existing Amtrak Ethan Allen Express Service		Proposed Service	
Northbound			
Albany	0:00	Albany	0:00
Schenectady	0:24	Schenectady	0:18
Saratoga Springs	0:52	Mechanicville	0:55
Fort Edward-Glens Falls	1:13	North Bennington	1:32
Castleton	2:18	Manchester	1:58
Rutland	3:05	Rutland	2:39
Southbound			
Rutland	0:00	Rutland	0:00
Castleton	0:27	Manchester	0:42
Fort Edward-Glens Falls	1:43	North Bennington	1:09
Saratoga Springs	2:12	Mechanicville	1:46
Schenectady	2:43	Schenectady	2:26
Albany	3:05	Albany	2:49

Conclusions

The TPC runs show the effects of the physical geographic features and the positive influence of capital projects on the different corridor segments. Between Albany and Schenectady, the southbound TPC run had a much faster run time than the northbound TPC run. This is due to the long segments of increasing elevation departing Albany to Schenectady.

On the VRS segment, proposed upgrades to the railroad track infrastructure to attain a 60 mph MAS along the straight segments, result in run times over the line segment that are superior to the schedules when the line last saw passenger service in the early 1950s. At that time, scheduled train run times between Rutland and North Bennington were 82 minutes southbound and 73 minutes northbound.

3.4 Station and Access Analysis

Three new stations would be included as part of the Ethan Allen Rerouting alternative. Their locations would be in:

- Mechanicville, NY
- North Bennington, VT
- Manchester, VT

The three stations would serve passengers using the service that travels between Albany, NY and Rutland, VT via the "Western Corridor".

Station Location

The following factors considered during the station siting process included:

- Proximity to town centers;
- Passenger/vehicular access to and from the site;
- Potential environmental constraints;
- Presence of sufficient tangent track to accommodate trains (both passenger and freight); and
- Availability of land/need to purchase property.

The general development plan for each station calls for a Class V station that would include:

- Platform for ingress/egress access to trains;
- Parking lot with 50 spaces;
- Auto pick-up/drop-off area; and
- Sheltered Waiting Area.

Under Title II of the Americans with Disabilities Act (ADA), intercity rail systems which are owned or operated by public entities must be made readily accessible to and useable by individuals with disabilities, including those who use wheelchairs. With respect to public entities, Title II requires that level boarding be provided for all train cars. The term "level boarding" means direct access between the platform and any car of the train without any change in level. For this project, level boarding would be provided by high-level platforms.

However, high-level platforms are often in conflict with freight service, which can be wider than a passenger train. There are currently freight operations on all sections of track associated with the proposed route from Albany to Rutland. Because freight vehicles have larger clearance requirements than passenger trains, either a gauntlet track (which place a set of tracks straddling one of the mainline tracks), a siding, or a high-level platform with retractable edges may be needed in some locations to achieve the required offset from the mainline. Freight operators in the study area have indicated they want to preserve the ability to run wide loads. High-level platforms with retractable edges were chosen to allow freight operators to continue to run wide loads.

3.5 Conceptual Operating Cost Estimate

O&M costs for each alternative were calculated based on the operating cost for the Ethan Allen service. The estimated cost for operating the Ethan Allen service during Fiscal Year 2014[7] was used to project the cost for the Build Alternatives.

[7] Based on the cost methodology developed as part of the coordination for cost-sharing related to Passenger Rail Investment Act of 2008 (PRIIA) Section 209.

The 209 cost model is made up of two major cost categories: third party costs and route costs. Route costs consist of activities specific to running the route such as labor or route advertising. Third party costs are those costs paid to the host railroads so that the passenger service may operate over their right-of-way. Table 6 shows the estimated costs for Third Party Costs and Route Costs for FY 2014.

Table 6 – O&M Cost Components

	No-Build	Alt. 1	Alt. 2
Third Party Costs	$868,000	$1,884,000	$1,016,000
Route Costs	$5,429,000	$9,864,000	$5,873,000

Funding and cost-sharing opportunities were also evaluated for each alternative and are presented in Table 7. VTrans is the sponsoring agency for the Ethan Allen service and would be for the new service, but could negotiate with NYSDOT on splitting the state's portion of the annual required subsidy based on train miles per state. For the existing Ethan Allen service extending from Albany north, the VTrans subsidy is based on the mileage from Fort Edwards – Glen Falls to Rutland, 44 miles, or approximately 44% of the 100-mile route. For the new route along the Western Corridor, the VTrans subsidy would cover from Mechanicville to Rutland, 81.4 miles, or approximately 81% of the 116.7-mile route. Since Alternative 2 primarily benefits Vermont, VTrans would subsidize 100% of the 116.7-mile route from Albany to Rutland. The NYSDOT subsidy includes credit that the state of New York receives on the Empire Corridor.

Table 7 – Annual O&M Cost-Sharing

	No Build	Alternative 1	Alternative 2
VTrans Subsidy	$1,473,000	$4,235,000	$3,175,000
NYSDOT Subsidy	$1,874,000	$3,083,000	$0
Total Subsidy	$3,347,000	$7,318,000	$3,175,000

While outside the scope of this study, the provision of intercity passenger rail service to Burlington can affect the operating cost factors proposed for this service. While ridership estimates are unavailable, the population base of the Burlington area is large and will likely result in considerable ridership added along the corridor. Depending on how the Burlington service is structured in terms of routing, it may result in less

operating subsidies for the proposed service as ridership revenue will increase.

3.6 Project Management

Prior to implementation, a Project Management Plan will be developed for the project to:

- Be based on a track record of success in completing railroad infrastructure projects;
- Use experienced in-house staff with consultant assistance;
- Create manageable contract packages)design/build wherever possible);
- Use Project management systems that are in place for technical, budget, and schedule monitoring and control;
- Include safety competent and references for construction and operations of existing and planned corridor system; and
- Include a risk assessment and risk management plan to mitigate identified risks in implementation.

The project recognizes the size and complexity inherent in this undertaking and understands the need to adapt existing management systems to accommodate the coordination that will be necessary to design, build, and acquire all of the pieces necessary to complete the project.

3.7 Project Schedule

The project schedule would be based on the capital spending plan, project sequencing, and design and construction requirements. The project will be sequenced to minimize existing rail traffic interferences and delays while providing the most cost effective contracting approach possible.

4

Capital and Implementation Plan

There are two components to the capital cost estimates – costs for track improvements and station costs.

Three alternatives were analyzed:

- For both Build Alternatives, service would be provided to Rutland via the "Western Corridor"; Alternative 1 retains the Ethan Allen service on its current alignment and adds a new service through southwest Vermont, while Alternative 2 reroutes the Ethan Allen through southwest Vermont. Both alternatives assume the routing from Albany to Mechanicville is via Schenectady.
- To operate the proposed new/rerouted service from Albany to Rutland via Schenectady and the Western Corridor, several infrastructure improvements are required to meet the targeted Maximum Allowable Speed (MAS) of 60MPH (at a minimum). Preliminary engineering has been completed to identify the necessary improvements, a summary of the track improvements by segment are included in Table 8. The same capital improvements are required for Alternatives 1 and 2.
- Based on the cost estimates prepared to date, the total capital cost for track improvements and stations is forecast to be approximately $112 Million as presented in Table 8.

Table 8 Track Improvements

Segment	Anticipated Infrastructure Improvements/Assumptions	Cost
Schenectady to CPF 480	• 700 ft of new mainline for new alignment through CPF 480; • All existing public grade crossings will require warning system modifications; • No track work required on existing mainline; • 50-foot wide crossings; • Signal system costs assumes electronic in-track signal system and interlocking tie-ins; • Aplauskill River Bridge needs upgrade to run double track; and • Two turnouts at Aplauskill River Bridge will be retired.	$6,150,000
CPF 480 to Mechanicville	• 2.5 miles of new mainline/sidings for congestion relief; • All existing public grade crossings will require warning system modifications; • No track work required on existing mainline; • 50-foot wide crossings; • Signal system costs assumes electronic in-track signal system and interlocking tie-ins; • Two #20 crossovers, one #15 crossover, three #20 turnouts, and one #15 turnout needed. Two turnouts need to be retired; and • Culvert at 1528+00 needs to be extended past proposed siding.	$17,006,000
Mechanicville to Hoosick	• Three new sidings totaling 4.75 miles – assume existing two sidings need no work; • Assumed 50-foot wide crossings • Updates to existing signal system; • All existing public grade crossings will require warning system modifications; and • Six new #20 turnouts needed for sidings.	$16,778,000
Hoosick to North Bennington	• Existing mainline needs upgrading over entire length; • 50-foot wide crossings; • Every third tie is replaced, 50% of segment requires additional surfacing and aligning of curvature to meet increased speeds; • All existing public grade crossings will require warning system modifications; • One mile of new siding required for congestion relief; • Two new #20 turnouts for new siding; and • Culvert at 3143+00 needs to be extended past proposed siding.	$5,302,000
North Bennington to Manchester	• Existing mainline needs upgrading over entire length; • 50-foot wide crossings; • All existing public grade crossings will require warning system modifications; • Every third tie is replaced, 50% of segment requires additional surfacing and aligning of curvature to meet increased speeds; • Bridge costs assumed for only bridges labeled in POOR condition; and • Assume VTR will allow increased passenger service without new signal system.	$17,208,000
Manchester to Rutland	• Existing mainline needs upgrading over entire length; • 50-foot wide crossings; • All existing public grade crossings will require warning system modifications; • Every third tie is replaced, 50% of segment requires additional surfacing and aligning of curvature to meet increased speeds; • Bridge costs assumed for only bridges labeled in POOR condition; • Siding at MP 36.15 is out of service – assume addition of 3,000-foot siding; • Two turnouts needed for new siding; • Siding entrance moved back 500 feet to avoid intersection at Brooklyn Road; and • Assume VTR will allow increased passenger service without new signal system.	$44,510,000
	TOTAL	$106,954,000

New stations are proposed to be constructed in Mechanicville, NY and North Bennington and Manchester, VT. Each station will have a high-level platform to conform to ADA level boarding requirements. The platforms will have retractable edges to allow wide-load freight to pass without constructing a second track to bypass the platform. The length of the platforms will be 425 feet to accommodate 5-car trainsets.

Table 9 summarizes the station cost estimates at each station location.

Table 9 – Station Cost Estimates

Station		
Mechanicville, NY		$1,550,000
North Bennington, VT		$2,290,000
Manchester, VT		$1,450,000
	TOTAL	$5,290,000

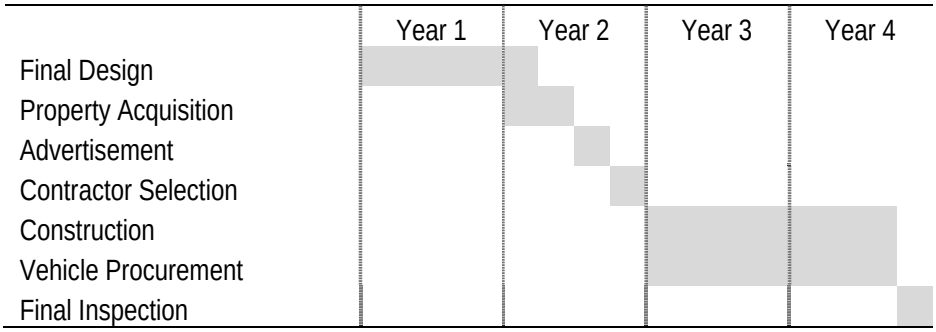
The total capital cost including infrastructure improvements and station costs is approximately $112 million. Total investment for the project is summarized in Table 10 below. A detailed estimates can be found in Appendix B Attachment B (Cost Estimate Tech Memo).

Table 10 – Total Investment

	Quantity	Unit	Unit Price	Total
New Siding Track	54,868	TF	$200.00	$10,973,600
Upgrade Mainline Track	283,800	TF	$52.66	$14,945,600
Installation of CWR	36	MI	$750,000.00	$27,225,000
Shift Mainline Track	17,239	TF	$150.00	$2,585,850
Signal System	4	EA	$4,000,000.00	$16,000,000
Grade Crossing - Public	3,600	TF	$3,000.00	$10,800,000
Grade Crossing - Private	130	EA	$5,000.00	$650,000
Grade Crossing - Warming System	72	EA	$150,000.00	$ 10,800,000
Grade Crossing Signage - All	172	EA	$5,000.00	$860,000
Undergrade Bridges	9	EA	$500,000.00	$4,500,000
Turnouts	25	EA	$230,200.00	$5,755,000
Turnout Removal	4	LS	$70,000.00	$280,000
Clearing & Filling	1	LS	$1,529,060.00	$1,529,060
Culvert Extension	2	EA	$25,000.00	$50,000
Mechanicville Station	1	LS	$1,550,000.00	$1,550,000
No. Bennington Station	1	LS	$2,290,000.00	$2,290,000
Manchester Station	1	LS	$1,450,000.00	$1,450,000
Construction Cost				$112,244,110
Preliminary Engineering (10%)				$11,224,000
Administration				$300,000
Construction Engineering (6%)				$6,735,000
Subtotal				$130,503,000
Contingency (6%)				$7,830,000
TOTAL				$138,333,000

The implementation schedule, shown in Table 11, would include final design, advertisement, contractor procurement, material and vehicle procurement, construction, and final inspection.

Table 11 - Implementation Schedule



Possible funding sources for this project would include:

- *High-Speed Intercity Passenger Rail Program Funds* – On April 16, 2009, President Obama, together with Vice President Biden and U.S. Transportation Secretary Ray LaHood, announced a new vision for developing high-speed intercity passenger rail in America, calling for a collaborative effort by the federal government, states, railroads, and other key stakeholders to help transform America's transportation system through the creation of a national network of high-speed rail corridors. To achieve this vision, FRA published the High-Speed Rail Strategic Plan in April 2009 and launched the High Speed Intercity Passenger Rail (HSIPR) Program in June 2009. To realize President Obama's vision of giving 80% of Americans access to high-speed rail within the next 25 years, Congress made $8 billion available through the American Recovery and Reinvestment Act of 2009 (ARRA). Congress continued to build upon the Recovery Act by making available an additional $2.1 billion through annual appropriations for FY 2009 and 2010, using the framework initially established by the Passenger Rail Investment and Improvement Act of 2008 (PRIIA), bringing the total program funding to $10.1 billion.[8]
- *Transportation Investments Generating Economic Recovery (TIGER) Program Funds* – The TIGER Discretionary Grant program provides a unique opportunity for the U.S. Department of Transportation to invest in road, rail, transit and port projects that promise to achieve critical national objectives. Congress dedicated more than $4.1 billion to the program: $1.5 billion for TIGER I, $600 million for TIGER II,

[8] http://www.fra.dot.gov/Page/P0060

$526.944 million for FY 2011, $500 million for FY 2012, $473.847 million for FY2013, and $600 million for the FY 2014 round of TIGER Grants to fund projects that have a significant impact on the Nation, a region or a metropolitan area.[9]

- State Funding (matching funds)
- Railroad Funding (matching funds)

The purpose of the Track 3 Planning study is to design a service that will be added to the pipeline of future HSIPR funded projects. As such, this project will rely heavily on federal assistance to implement the necessary capital improvements. At least 80% of the cost of capital improvement is anticipated to come from HSIPR program funding, or other federal programs.

This project will also seek federal operating assistance. During the course of this planning study, section 209 of the Passenger Rail Investment and Improvement Act of 2008 (PRIIA) was implemented. Under Section 209, all short-distance Amtrak corridor services (less than 750 miles) became state-supported routes in which states must pay the proportional costs associated with their respective corridor route. The practical effect of Section 209 was a significant increase in the amount of operating subsidies both New York and Vermont had to pay for their respective intercity passenger rail services. New York's annual subsidy increased from approximately $5 million to $25 million while Vermont's increased from approximately $4.5 million to over $7.8 million.

Lastly, this project would develop service agreements and a project management approach. A sample Service Agreement and Project Management Plan are attached as Appendix D and Appendix E, respectively.

[9] http://www.dot.gov/tiger

5

Ridership Forecast and Revenue Estimates

Chapter 5 presents the travel demand forecasting methodology including ridership and revenue projections.

5.1 Scope of the Travel Demand Model

For the travel demand modeling effort, three alternatives were analyzed:

- No-Build Alternative
- Alternative 1 – New Service to SW Vermont
- Alternative 2 – Rerouted Ethan Allen Service

The following sections summarize the service characteristics of the alternatives modeled, the components of the travel demand model, and results.

For both Build Alternatives, service would be provided to Rutland via the "Western Corridor"; however Alternative 1 retained the Ethan Allen service – which provides service to Rutland through New York – and Alternative 2 reroutes the Ethan Allen through southwest Vermont. Both alternatives assume the routing from Albany to Mechanicville is via Schenectady.

5.2 Travel Demand Model Components

The ridership forecasts were developed using an analytical procedure considering the following:

- Existing demographic and economic conditions in study area;
- Forecasted demographic and economic conditions in the study area;
- Rail ridership of existing services in the region, specifically the ridership of the Adirondack and Ethan Allen services operated by Amtrak;
- Ridership for station pairs served by the Adirondack and Ethan Allen services;
- Service level and fare of existing and proposed rail service in the region; and
- Travel time, operating costs and toll costs of automobile drivers or passengers in the region.

The study area was divided into traffic districts, each representing the catchment area of an existing or proposed rail station. For the purposes of the ridership analysis, the catchment areas were defined as the 10-mile buffer around each station. If a portion of a town fell within 10 miles of a station it was assigned to a station. Towns that fell within 10 miles of two stations were assigned to the closest station. The ridership forecasting procedure was based on district-to-district travel.
The ridership model was then refined to reflect:

- **Updated (train) travel times.** The travel times used in the refined model were based on the Rail Traffic Controller (RTC) model. The infrastructure used in the model was prepared to run the model's Train Performance Calculator (TPC) which calculated travel times between station based on the operating speeds of the train, the tractive effort and braking, station stops and cumulative travel times. The times used for the original ridership analysis were calculated based on distance between stations, assumed Maximum Allowable Speed (MAS), and a (conservative) impedance factor that was applied across the board. The travel times generated as part of the TPC run are faster than the originally calculated times.
- **Updated fares.** For the original iteration of the ridership analysis, fares were matched to existing, published fares for Amtrak trips (Ethan Allen or Adirondack) of similar trip length for the trip pairs in the study area. The refined ridership model reflects current fares for the Ethan Allen service and incremental fares based on average cost per mile for non-Ethan Allen trip pairs.

Ridership forecasts are shown in Table 12.

Table 12 – Revised Ridership Forecasts

Station	2010 Base	2030 No-Build	2030 Alt. 1 New	2030 Alt. 2 New
Montreal - Fort Ticonderoga	5,200	5,700	5,700	5,700
Rutland	8,300	10,800	14,900	12,500
Castleton	1,100	1,800	1,900	--
Whitehall	900	1,000	1,000	1,000
Fort Edward	4,300	4,600	4,500	3,100
Saratoga Springs	15,100	16,600	16,500	11,300
Schenectady	8,100	8,400	10,300	9,200
Manchester	--	--	4,400	4,400
North Bennington	--	--	6,400	6,400
Mechanicville	--	--	4,600	4,600
Albany/Rensselaer	3,200	3,400	3,700	3,300
Hudson - NY Penn	32,400	35,900	52,100	42,600
Total	78,600	88,200	126,000	104,100

Note: Ridership numbers reflect one-way boardings.

5.3 Revenue Forecasts

Annual revenue was calculated in the ridership model for the year 2030. The forecasted revenue was prepared using current fares for existing station-to-station trips (as accessed on the Amtrak website). A similar fare structure was developed for the proposed new stations based on distance between origin and destination. The total fare revenue for each alternative was calculated by multiplying the station-to-station ridership matrix with the attendant station-to-station fare matrix. The 2014 figures were based on the actual performance of the Ethan Allen service, factoring from the projected 2030 estimate for the No-Build Alternative. Revenue forecasts are shown in Table 13.

Table 13 – Revenue Forecasts

	No-Build	Alt. 1	Alt. 2
Annual Revenue (2014)	$2,950,000	$4,431,000	$3,714,000

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6

Public Benefits Analysis

This project is expected to deliver public benefits consistent with the project goals including:

- Extending intercity passenger rail access and improving mobility;
- Maximizing transportation efficiency;
- Supporting economic and sustainable development; and
- Protecting environmental quality.

The project would achieve this by:

- Increasing ridership along the corridor from an estimated 88,200 annual riders in 2030 to an estimated 126,000 riders per year, a 43 percent increase.
- Opening up operational flexibility to passengers by providing a new daily service option that doubles service at some stations and increases annual seat miles by 117 percent;
- Improving track and sidings that could potentially increase existing freight movement;
- Providing connections to Mechanicville, Manchester and Bennington and increasing connections to Rutland with major employers in the Albany Capitol District;
- Increasing access to Rutland and providing access between Mechanicville, Manchester and Bennington and institutional services in the Albany Capitol District and New York City;
- Providing access to regional attractions and destinations in the vicinity of Rutland, Manchester, Bennington and Mechanicville.
- Presenting economic, smart growth, and TOD opportunities in the vicinity of existing stations and new stations while improving access to regional attractions along the Western Corridor;

- Potentially decreasing traffic due to mode shift from cars to rail for trips to/from newly served stations; and
- Decreasing air quality emissions such as VOC, NO_x, PM and CO due to a forecasted decrease in vehicle miles traveled.

The project would provide an efficient intercity passenger rail-based transportation link that will benefit un-served and under-served communities in southwestern Vermont and eastern central New York. The project would provide intercity passenger rail connections between Rutland, Vermont and Albany, New York with new intercity passenger rail services in southwestern Vermont and improvements to existing intercity passenger rail services in eastern central New York State including improved connections to passenger services in New York, Albany, and Schenectady, New York.

7

Stakeholder Agreements

New York and Vermont have a stakeholder agreement for operation of the Ethan Allen Service. This agreement will need to be modified to reflect Alternative 1. In addition, agreements will be needed with Amtrak, Pan Am Railway, CSX and VRS.

Adjacent municipalities will also be affected by project implementation and any necessary agreements with those parties will be negotiated as necessary to meet program schedules and address specific items. No grade crossings will be affected, but land for stations will be needed in Mechanicville, North Bennington and Manchester. In addition, use of the historic North Bennington Station will need to be negotiated.

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Appendices

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A

Identification and Evaluation of Alternatives – Phase One

This chapter describes the initial alternatives identified to address the Purpose and Need of the New York-Vermont Bi-State Intercity Passenger Rail Study and evaluates those alternatives. The first section in this chapter introduces the universe of potential service options and describes each alternative. The second section presents the anticipated capital improvements (and related costs) necessary to implement each alternative and screens each alternative against the evaluation criteria developed for the Phase One Screening. The final section presents the Build Alternatives that will move forward to the Phase Two analyses and screening.

The Phase One Screening of alternatives evaluates the ability of the alternatives to meet the broad objectives established for the project. The basic requirement for any alternative is that it satisfies the Purpose and Need statement for the project:

> The purpose of this project is *to identify and establish an efficient intercity passenger rail-based transportation link that will benefit un-served and underserved communities in southwestern Vermont and eastern central New York. The project would provide intercity passenger rail connections between Rutland, Vermont and Albany, New York, with new intercity passenger rail services in southwestern Vermont and improvements to existing intercity passenger rail services in eastern central New York State.* The project would also provide a key link along Vermont's "Western Corridor", with improved connections to passenger rail services in New York and beyond via Albany and/or Schenectady, New York.
>
> The project study area of southwestern Vermont and eastern central New York has limited transportation options. Communities within the study area have no direct access to the interstate highway system or a major airport, limited intercity passenger rail service, and limited intercity bus service. This condition has been, and continues to be, a hardship for residents and an impediment to economic development in the region.
>
> The study area includes the major Amtrak station in Albany/Rensselaer, which in turn provides connections to other services in the northeast and beyond. Lack of intercity passenger rail, particularly in southwestern Vermont, limits the

options for those residents wanting to travel within the study area and within the greater region. With inevitable increases in the price (and possible subsequent decreases in the availability) of fuel for personal vehicles over the next 20 to 30 years, all areas of Vermont and eastern rural New York will need access to alternative transportation systems. Extending intercity passenger rail service within the project study area could be a first step towards meeting this goal.

The lack of rail not only hinders residents travel within the region, it is also an impediment to attracting travelers to the study area. This is a significant obstacle given the large role visitation continues to play in the regional economy. Through its proximity to the major Amtrak station in Albany/Rensselaer, the study area has access to frequent service to New York City. This geography provides an opportunity for intercity trips between communities within the study area and New York's Penn Station. Approximately four million residents in the New York City metropolitan area do not own a personal automobile and rely heavily on intercity passenger rail to travel the region. A rail connection to the study area could provide an extremely attractive option, based on both cost and travel time, for these potential travelers. Connecting the region to this type of buying power could stimulate significant economic development opportunities. However, the option is not currently available because there is no direct service link between Albany and southwestern Vermont.

Intercity passenger rail improvements are needed within the project study area as a result of:

- Insufficient access to intercity passenger rail services for those communities that are currently underserved or un-served;
- Insufficient intercity passenger and higher-speed rail service to meet market demands within and to/from the region;
- Limited ability of the existing freight infrastructure to accommodate passenger rail service at higher speeds and greater frequencies; and
- Lack of a transportation-focused catalyst for supporting economic development within the region.

The States of Vermont 2006 *State Rail and Policy Plan* identified new intercity passenger rail service along the Vermont Railway between Hoosick, NY and Burlington, VT as one of its priorities for intercity passenger rail. The mapped system in the *Vision for the New England High Speed and Intercity Rail Network* identifies existing service and potential services within the project study area, including the "Western Corridor" in Vermont and nearby New York communities. This region is an important geographical area and link to the overall rail system because it will provide direct intercity passenger rail connections to communities in southwestern Vermont, which will advance the goal of a continuous, integrated rail system in New England.

During Phase One, the alternatives developed to address the needs listed above are only defined conceptually; specific aspects such as schedule, specific infrastructure improvements and general station locations will be investigated during the Phase Two Screening. The intent of the Phase One evaluation is to determine those alternatives that meet or exceed the project evaluation criteria, and narrow the initial group of options to a set of Build Alternatives that will be carried forward to a more detailed level of analysis with the No-Build Alternative during the Phase Two Screening.

A.1 Description of Alternatives

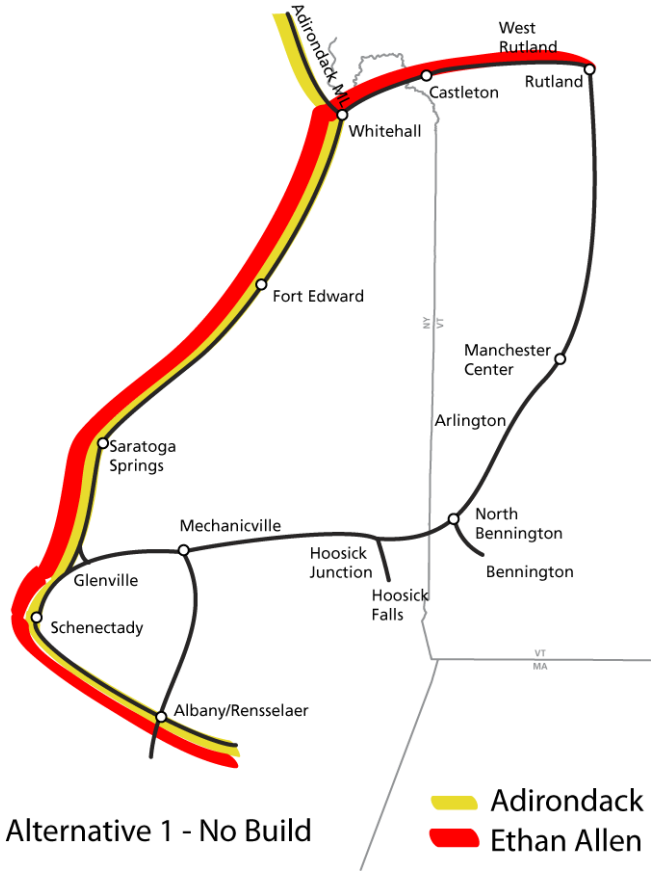
Six alternatives have been developed to address mobility and transportation needs in the study area. These alternatives were established through a review of previous studies[1] and planning as well as a collaborative workshop. The initial alternatives were broadly defined to ensure that as many potentially feasible alternatives as possible were considered and evaluated. All six of the alternatives utilize existing, active rail lines within the study area. These rail lines are primarily used for the movement of freight as discussed in the Existing Conditions Summary (Section 4.3.2.6 of the Environmental Assessment). Two alternatives emerged from the Phase One Screening to continue into the Phase Two Screening and the next steps of project development.

In considering the routing of a new passenger rail service from southwestern Vermont to Albany/Rensselaer, two options are apparent to make the connection between Mechanicville, New York and Albany/Rensselaer, New York. The first option is via the CP Colonie Line, which runs in a north-south orientation west of the Hudson River from Mechanicville, New York to Albany/Rensselaer, New York (CP Colonie Routing). The second option is via the CP Freight Subdivision between Mechanicville, New York and Schenectady, New York and the CSX Hudson Subdivision from Schenectady, New York to Albany/Rensselaer, New York (Schenectady Routing). Both of these routing options have been evaluated at a conceptual level of definition.

[1] Albany/Bennington/Rutland/Burlington Rail Passenger Service Study, VAT, 1998; Vermont Western Corridor Study – Report to Congress, 2000; Comparative Analysis of Transp. Needs in 4 Areas of VT (VT Transp. Board), 2004;Albany/Bennington/Rutland/Burlington Project, VTrans, 2004; VT State Rail & Policy Plan, 2006; NY State Rail Plan, 2009; Vision for the New England HSR and Intercity Rail Network, 2009; NY-VT HISPR Track 3 Application , 2009; Ethan Allen HSIPR Track 2 Application, 2009; Vermont Western Corridor Management Plan – Report to Congress, 2010; Projected Improvements to the Vermont Railway Western Corridor, 2010

A.1.1 Alternative 1: No-Build

Figure 1 Alternative 1 - No-Build



Alternative 1 - No Build

The No-Build Alternative consists of the existing transportation systems plus the currently planned and programmed track and service improvements in the project study area through the long-range planning horizon (year 2030). The National Environmental Policy Act (NEPA) requires inclusion in the evaluation of alternatives of a No-Build Alternative. It is evaluated to identify the operational and environmental effects on the study area if no action is taken. To meet this NEPA requirement, Alternative 1, the No-Build Alternative, will be advanced to the second phase of the screening process so it can be compared to the final alternatives. Figure 1 provides a schematic drawing of the No-Build Alternative

Existing passenger rail services in the study area included in the No-Build Alternative include:

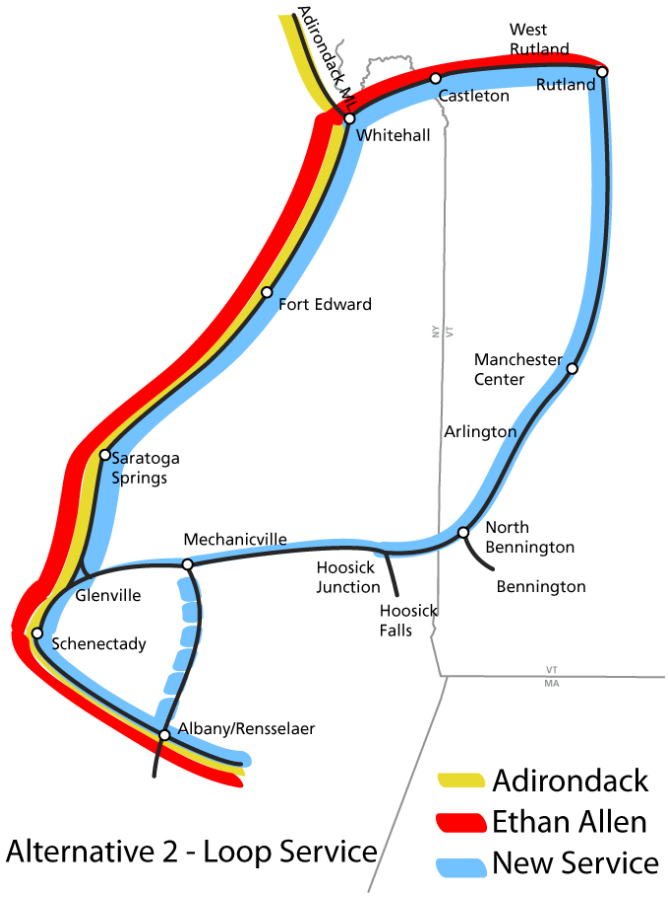
- The **Ethan Allen** service provides connections between Rutland, Vermont and New York City. It makes one round trip daily. Station stops within the project study area include Rutland, and Castleton, Vermont, and Fort Edward/Glens Falls, Saratoga Springs, Schenectady and Albany/Rensselaer, New York.
- The **Adirondack** service provides connections between Montreal and New York City. It makes one round trip daily. Station stops within the project study area include Whitehall, Fort Edward/Glens Falls, Saratoga Springs, Schenectady and Albany/Rensselaer, New York.

The No-Build Alternative includes programmed and funded improvements to the existing rail infrastructure in the study area. These improvements are:

- Addition of a fourth track at Albany/Rensselaer station ($58.1M)
- Addition of a second mainline track between Albany/Rensselaer and Schenectady ($91.2M)
- Two miles of new track at Ballston Spa to provide a five (5) mile segment of double-track extending from Saratoga Springs to Ballston Spa, New York ($6.6M).

A.1.2 Alternative 2: Loop Service

Figure 2 Alternative 2 - Loop Service



Alternative 2 would provide "loop" service connecting stations in Albany/Rensselaer, Mechanicville, Schenectady, Saratoga Springs, and Fort Edward/Glens Falls, New York; and Castleton, Rutland, Manchester, and North Bennington, Vermont. Figure 2 is a schematic map of the Loop Service Alternative.

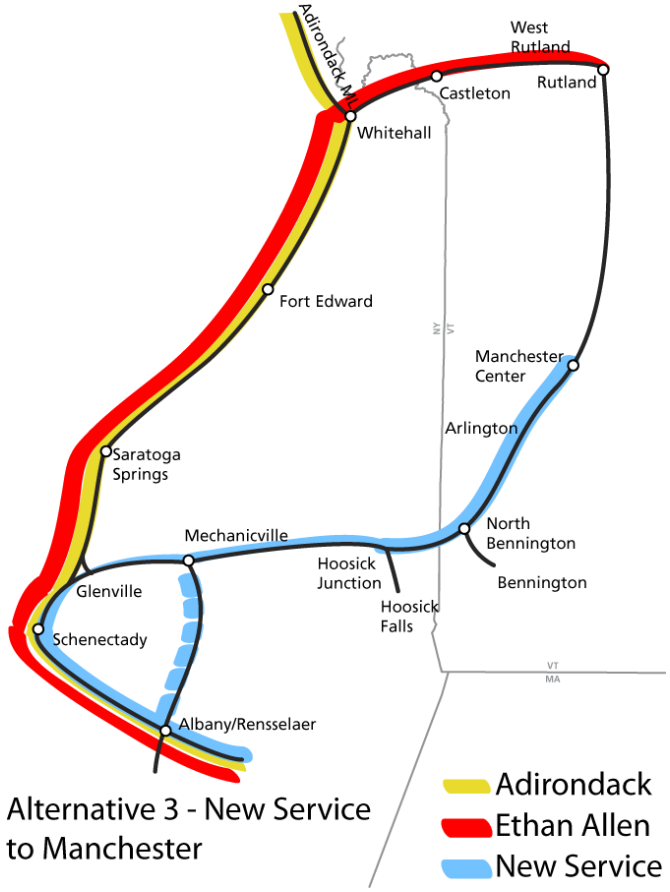
Alternative 2 would require one additional trainset to provide connecting service out of the Albany/Rensselaer, New York station. The additional trainset would operate in one direction (clockwise or counterclockwise) providing one new round trip per day.

In Alternative 2 the existing Ethan Allen and Adirondack services would continue to operate on the same routes and frequencies (one round trip per day for both) as they do now.

This alternative would introduce service to Mechanicville, New York, and to North Bennington and Manchester, Vermont.

A.1.3 Alternative 3: New Service to Manchester

Figure 3 Alternative 3 - New Service to Manchester



Alternative 3 would provide new service to southwest Vermont, with a terminus in Manchester. Figure 3 is a schematic map of the New Service to Manchester Alternative.

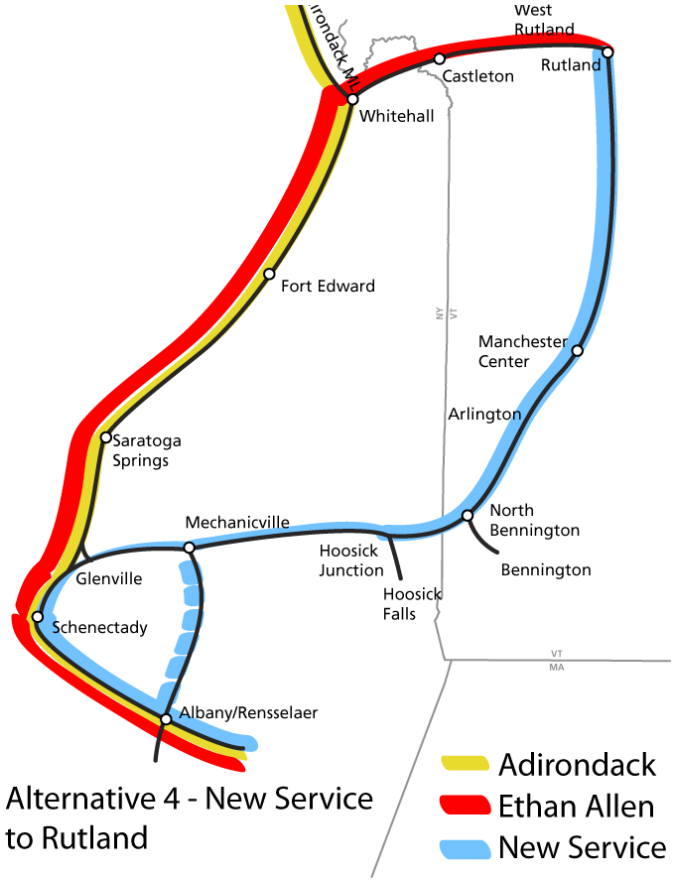
This alternative would extend service from the Albany/Rensselaer, New York station to new stations in Mechanicville, New York and North Bennington, Vermont and Manchester, Vermont. Alternative 3 would provide one round trip per day.

During the public review of the proposed service alternatives, it was suggested that a through service (no transfer at Albany/Rensselaer, New York, for continued service southbound along the Empire Corridor) would be preferred over a connecting service at Albany/Rensselaer (if trains terminate at this station, a transfer is required). For Alternative 3 to operate as a through service, an existing Empire Corridor train that currently terminates in Albany/Rensselaer, New York would be extended to Manchester, Vermont. Attachment 2 describes how a through service versus connecting service would operate.

In Alternative 3 the existing Ethan Allen and Adirondack services would continue to operate on the same routes and frequencies (one round trip per day for both) as they do now. It would provide new service to Mechanicville, New York and North Bennington and Manchester Center, Vermont but would not connect between Manchester Center and Rutland, Vermont.

A.1.4 Alternative 4: New Service to Rutland

Figure 4 Alternative 4 - New Service to Rutland



Alternative 4 would extend service to southwest Vermont, with a terminus in Rutland, Vermont. Figure 4 is a schematic map of the New Service to Rutland Alternative.

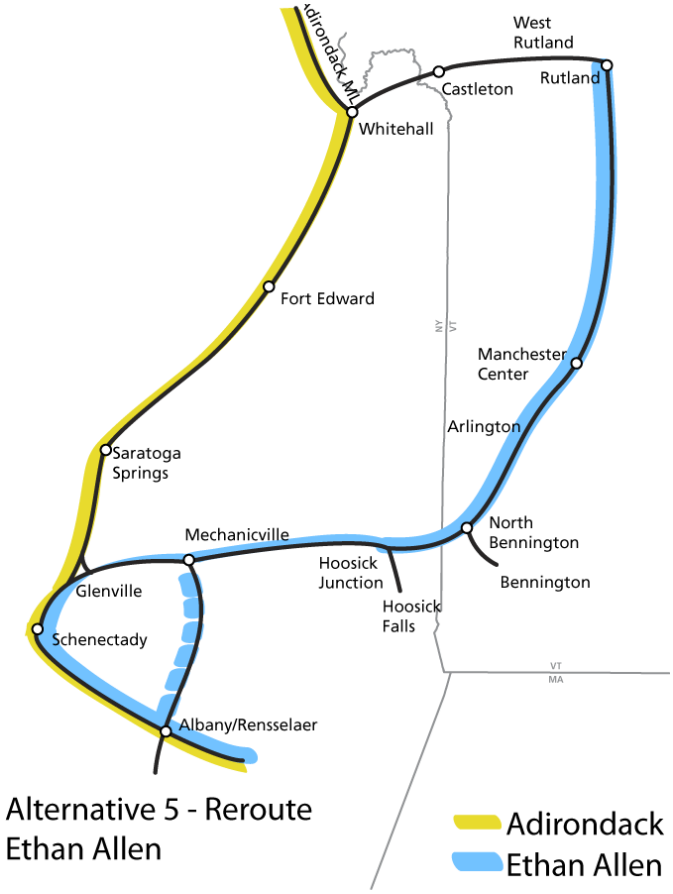
This alternative would operate out of Albany/Rensselaer, New York station connecting to new stations in Mechanicville, New York and North Bennington and Manchester, Vermont, en route to a terminus in Rutland, Vermont. Alternative 4 would operate one round trip per day.

Similar to Alternative 3, a preference for through service (no transfer needed for service beyond Albany/Rensselaer, New York, along the Empire Corridor) over a connecting service at Albany/Rensselaer (trains terminate at this station, transfer required) by the public. To operate Alternative 4 as a through service, an existing Empire Corridor train that currently terminates at Albany/Rensselaer, New York would be extended to Rutland, Vermont. Attachment 2 describes the through versus connecting service operations.

In Alternative 4 the Ethan Allen and Adirondack services would continue to operate on the same routes and frequencies (one round trip per day for both) as they do now. Alternative 4 would provide new service to Mechanicville, New York and North Bennington and Manchester, Vermont.

A.1.5 Alternative 5: Rerouted Ethan Allen Service

Figure 5 Alternative 5 - Reroute Ethan Allen



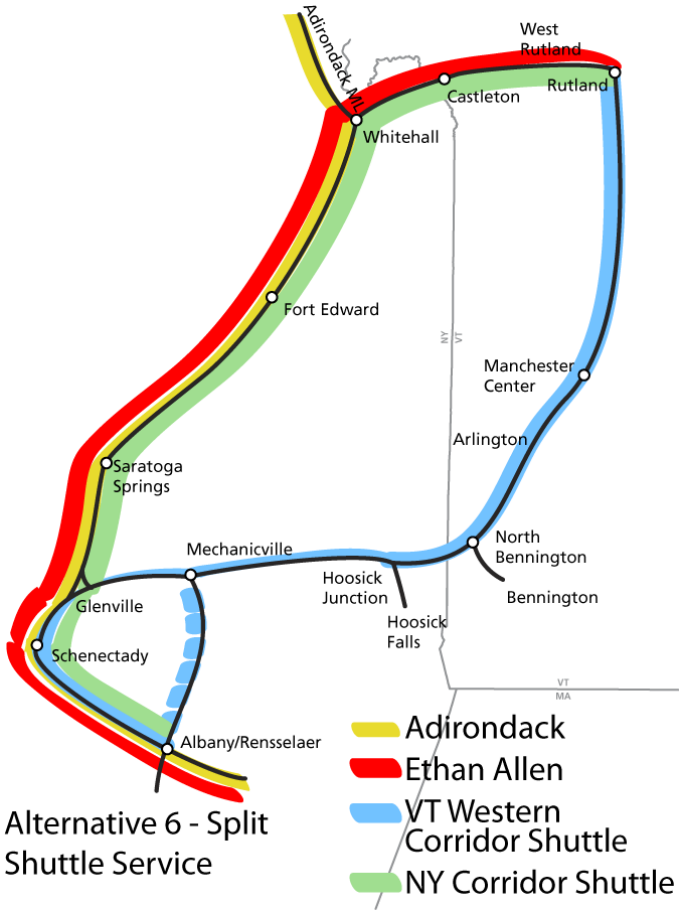
Alternative 5 would re-route the existing Ethan Allen service through southwest Vermont. The alternative would operate between Rutland, VERMONT and Albany/Rensselaer, New York through southwest Vermont with stops in Mechanicville, New York and North Bennington and Manchester, Vermont. Figure 5 is a schematic map of the Rerouted Ethan Allen Service Alternative.

In Alternative 5 the existing Adirondack service would continue to operate on the same route and at the same frequency (one round trip per day) as it does now. The Ethan Allen service would operate one round trip per day.

With this alternative service to Castleton would be eliminated while service to Mechanicville, New York and North Bennington and Manchester, Vermont would be added.

A.1.6 Alternative 6: Split Shuttle Service

Figure 6 Alternative 6 - Split Shuttle Service



Alternative 6 would be a "shuttle" service connecting Albany/Rensselaer, New York and Rutland, Vermont via two routes. The termini for both services would be Albany/Rensselaer, New York on the south end and Rutland, Vermont on the north end. One would stop in Mechanicville, New York and North Bennington and Manchester, Vermont. The other would follow the same route as the existing Ethan Allen service, stopping at Castleton, Vermont and Fort Edward/Glens Falls, Saratoga Springs and Schenectady, New York. Each service would operate on one side of the loop and provide round-trip service ("out and back") – for a total of two trains per day on each side of the loop. Figure 6 is a schematic map of the Split Service Shuttle Alternative.

In Alternative 6 the existing Ethan Allen and Adirondack services would continue to operate on the same frequencies (one round trip per day for each) as they do now. This alternative would provide new service to Mechanicville, New York and North Bennington and Manchester Center, Vermont.

A.1.7 Summary of Alternatives

Table A1 summarizes how each alternative would change the intercity passenger rail service in the project study area.

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Table A1 - Operational Summary of the Alternatives

Alternative	Ethan Allen Service	Adirondack Service	Changes to Service along Eastern New York Corridor	Changes to Service along Southwest Vermont Corridor	New Stations	PotentialTimetable for New/Rerouted Service			
						Southbound (Read Down)		Northbound (Read Up)	
1 – No-Build	Remains	Remains	No Change	No Change	None	N/A		N/A	
2 – Loop Service	Remains	Remains	One additional train	New service (one new train – one way trip); terminates in Rutland	Mechanicville, NY North Bennington & Manchester, VT	Rutland Manchester North Bennington Mechanicville Schenectady Albany/Rensselaer	9:00AM 9:30 10:15 10:45 11:15 11:35AM	Rutland Castleton Ft. Edward Saratoga Springs Schenectady Albany/Rensselaer	2:15PM 2:00 1:10 12:40 12:10PM 11:50AM
3 – New Service to Manchester	Remains	Remains	No Change	New service (one RT[1] train); terminates in Manchester.	Mechanicville, NY North Bennington & Manchester, VT	Manchester North Bennington Mechanicville Schenectady Albany/Rensselaer	9:45AM 10:15 11:00 11:28 11:45AM	Manchester North Bennington Mechanicville Schenectady Albany/Rensselaer	4:45PM 4:15 3:30 3:00 2:40PM
4 – New Service to Rutland	Remains	Remains	No Change	New service (one RT train); terminates in Rutland.	Mechanicville, NY North Bennington & Manchester, VT	Rutland Manchester North Bennington Mechanicville Schenectady Albany/Rensselaer	9:00AM 9:45 10:15 11:00 11:28 11:45AM	Rutland Manchester North Bennington Mechanicville Schenectady Albany/Rensselaer	5:30PM 4:45 4:15 3:30 3:00 2:40PM
5 – Rerouted Ethan Allen Service	Shifts to VT corridor	Remains	Loss of one train	New service (one RT train); terminates in Rutland.	Mechanicville, NY North Bennington & Manchester, VT	Same as Alternative 4			
6 – Split Shuttle Service	Remains	Remains	One additional RT	New service (one RT train); terminates in Rutland.	Mechanicville, NY North Bennington & Manchester, VT	VT Shuttle Rutland Manchester North Bennington Mechanicville Schenectady Albany/Rensselaer NY Shuttle Rutland Castleton Ft. Edward Saratoga Springs Schenectady Albany/Rensselaer	 7:00AM 7:30 8:00 8:45 9:15 9:35AM 12:00PM 12:15 1:05 1:35 2:05 2:30PM	VT Shuttle Rutland Manchester North Bennington Mechanicville Schenectady Albany/Rensselaer NY Shuttle Rutland Castleton Ft. Edward Saratoga Springs Schenectady Albany/Rensselaer	 12:50PM 12:05PM 11:35 10:50 10:20 10:00AM 5:30 5:10 4:20 3:50 3:20 3:00PM

1 RT = Round Trip

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A.2 Evaluation of Alternatives

The goal of the Phase One Screening is to objectively identify and evaluate the universe of alternatives and identify those that best satisfy the project purpose and need. During the Phase One Screening, the alternatives are evaluated in a conceptual manner. The Phase One Screening process includes a determination of the basic realistic feasibility of each alternative. The Project Purpose and Need statement is the basis for the evaluation criteria, which have been grouped into four categories:

- Rail Access and Mobility
- Transportation Efficiencies
- Economic/Sustainable Development
- Environmental Quality

Section A.3 summarizes the performance of each alternative for these evaluation categories. Each alternative was evaluated based on best available information. Order of magnitude capital cost, operations and maintenance (O&M) cost estimates and ridership forecasts were developed to support the evaluation.

An initial assessment of the six alternatives was conducted and distributed for review. Based on comments received on the initial assessment, additional analyses were conducted to further test and refine the alternatives.

A.2.1 Rail Access and Mobility

The criteria used to measure which proposed service options improve intercity passenger rail access and regional mobility include:

- Improved regional mobility and access to key destinations within the project study area;
- Travel time savings as compared to existing travel modes (rail, car, bus); and
- Sufficiency of the frequency of service and routing to make the alternative an attractive transportation option.

At this level of analysis, the performance of each alternative is based on the proposed routing. A brief summary of the performance of each alternative for the three Rail Access and Mobility criteria is provided below. The ridership forecasts developed to complete the Phase One Screening are presented and discussed in Section A.3.

Alternative 1 – No-Build

Since no service improvements would be made under this alternative, other than planned and programmed track and service improvements, the existing deficiencies in coverage within the study area would remain unchanged – specifically in southwestern Vermont.

Alternative 2 – Loop Service

This alternative would extend intercity passenger rail service into southwest Vermont, increasing access to passenger rail service. The proposed single direction loop routing, with connecting (rather than through) service at Albany/Rensselaer, and a single round trip per day would make the round trip inefficient and travel time savings less likely.

Due to the proposed routing, this alternative is anticipated to be a less attractive option than the other alternatives because in the out-bound or in-bound direction for those boarding in Manchester or North Bennington it would require users to travel through Rutland.

Alternative 3 – New Service to Manchester

This alternative would extend intercity passenger rail service into southwest Vermont, improving the rail access from that region to Albany/Rensselaer and other Northeast destinations (via Empire Corridor connections). Potential travel time savings are anticipated due to new connections in southwest Vermont.

This routing is anticipated to be attractive for travelers between Manchester or North Bennington and Albany/Rensselaer; however it is anticipated that the lack of a connection to Rutland would limit the attractiveness of the service.

Alternative 4 – New Service to Rutland

This alternative would extend intercity passenger rail service into southwest Vermont, improving rail access from that region to Albany/Rensselaer and the Northeast (via Empire Corridor connections). Potential travel time savings are anticipated with this alternative due to new connections in southwest Vermont.

Alternative 5 – Rerouted Ethan Allen Service

This alternative would extend intercity passenger rail service into southwest Vermont, improving rail access from that region to Albany/Rensselaer and the Northeast (via Empire Corridor connections); however it would reduce service to/from the New York portion of the project study area. While there may be

potential time savings for travelers to/from southwest Vermont, there may also be an increase in travel times to/from destinations in New York due to the reduction in service in that portion of the study area.

This alternative is anticipated to be attractive for travelers to/from southwest Vermont, but unattractive for travelers on the New York side of the study area.

Alternative 6 – Split Shuttle Service

This alternative would extend intercity passenger rail service into southwest Vermont and add additional service on the New York side of the study area, improving mobility and access to intercity passenger rail throughout the corridor. Potential travel time savings are anticipated due to new connections in southwest Vermont, and the additional frequency on the New York side of the study area.

A.2.2 Transportation Efficiencies

The factors used to evaluate how well proposed alternatives maximize transportation efficiencies include:

- Ability to provide viable and useful intermodal connections;
- Cost efficiency (based on order of magnitude cost estimates);
- Ability to maximize the existing infrastructure;
- Ability to minimize impacts to existing freight and passenger rail operations post implementation; and
- Ability to minimize impact to existing freight and passenger rail operations during construction.

To support the evaluation of the proposed alternatives against the listed criteria a summary of the intermodal connections by alternative was prepared, and order of magnitude capital costs (for both rail infrastructure and facilities) and preliminary operations and maintenance (O&M) costs were estimated. A brief summary of the performance of each alternative for each of the Transportation Efficiency criteria is provided following the capital cost and operations summaries.

Intermodal Connections

Table A2 provides a summary of the intermodal connections available at each station (or within ½-mile of the station), by alternative. New stations were not cited as part of the Phase One evaluations; in these cases, intermodal connections available within the towns are listed.

Table A2 - Intermodal Connections at Study Area Stations, by Alternative

Stations	Available Intermodal Connections, by Alternative					
	ALT 1	ALT 2	ALT 3	ALT 4	ALT 5	ALT 6
Rutland	Passenger Train – Ethan Allen Local Bus - MVRT	Passenger Train – Ethan Allen, New Service Local Bus - MVRT	Passenger Train – Ethan Allen Local Bus - MVRT	Passenger Train – Ethan Allen, New Service Local Bus - MVRT	Passenger Train – Ethan Allen (rerouted) Local Bus - MVRT	Passenger Train – Ethan Allen, New Service Local Bus - MVRT
Castleton	Passenger Train – Ethan Allen Local Bus - MVRT	Passenger Train – Ethan Allen, New Service Local Bus - MVRT	Passenger Train – Ethan Allen Local Bus - MVRT	Passenger Train – Ethan Allen Local Bus - MVRT	Local Bus - MVRT	Passenger Train – Ethan Allen, New Service Local Bus - MVRT
Whitehall	Passenger Train – Adirondack	Passenger Train – Adirondack	Passenger Train – Adirondack	Passenger Train – Adirondack	Passenger Train – Adirondack	Passenger Train – Adirondack
Fort Edward/ Glens Falls	Passenger Train – Ethan Allen, Adirondack Local Bus - GGFT	Passenger Train – Adirondack, Ethan Allen, New Svc Local Bus - GGFT	Passenger Train – Ethan Allen, Adirondack Local Bus - GGFT	Passenger Train – Ethan Allen, Adirondack Local Bus - GGFT	Passenger Train – Adirondack Local Bus - GGFT	Passenger Train – Adirondack, Ethan Allen, New Svc Local Bus - GGFT
Saratoga Springs	Passenger Train – Ethan Allen, Adirondack Local Bus - CDTA Regional Bus – AT, Greyhound	Passenger Train – Ethan Allen, Adirondack, New Service Local Bus - CDTA Regional Bus – AT, Greyhound	Passenger Train – Ethan Allen, Adirondack Local Bus - CDTA Regional Bus – AT, Greyhound	Passenger Train – Ethan Allen, Adirondack Local Bus - CDTA Regional Bus – AT, Greyhound	Passenger Train – Adirondack Local Bus - CDTA Regional Bus – AT, Greyhound	Passenger Train – Ethan Allen, Adirondack, New Service Local Bus - CDTA Regional Bus – AT, Greyhound
Schenectady	Passenger Train – Ethan Allen, Adirondack, Empire Service Local Bus - CDTA Regional Bus – AT, Greyhound	Passenger Train – Ethan Allen, Adirondack, Empire Service, New Service Local Bus - CDTA Regional Bus – AT, Greyhound	Passenger Train – Ethan Allen, Adirondack, Empire Service, New Service Local Bus - CDTA Regional Bus – AT, Greyhound	Passenger Train – Ethan Allen, Adirondack, Empire Service, New Service Local Bus - CDTA Regional Bus – AT, Greyhound	Passenger Train – Ethan Allen (rerouted), Empire Service, Adirondack Local Bus - CDTA Regional Bus – AT, Greyhound	Passenger Train – Ethan Allen, Adirondack, Empire Service, New Service Local Bus - CDTA Regional Bus – AT, Greyhound
Albany/ Rensselaer	Passenger Train – Ethan Allen, Adirondack, Empire Service Local Bus - CDTA Regional Bus – AT, YT, Greyhound	Passenger Train – Ethan Allen, Adirondack, Empire Service, New Service Local Bus - CDTA Regional Bus – AT, YT, Greyhound	Passenger Train – Ethan Allen, Adirondack, Empire Service, New Service Local Bus - CDTA Regional Bus – AT, YT, Greyhound	Passenger Train – Ethan Allen, Adirondack, Empire Service, New Service Local Bus - CDTA Regional Bus – AT, YT, Greyhound	Passenger Train – Ethan Allen (rerouted), Empire Service, Adirondack Local Bus - CDTA Regional Bus – AT, YT, Greyhound	Passenger Train – Ethan Allen, Adirondack, Empire Service, New Service Local Bus - CDTA Regional Bus – AT, YT, Greyhound
Mechanicville	Local Bus – Mech. City Bus	Passenger Train – New Service Local Bus – Mech. City Bus	Passenger Train – New Service Local Bus – Mech. City Bus	Passenger Train – New Service Local Bus – Mech. City Bus	Passenger Train – New Service Local Bus – Mech. City Bus	Passenger Train – New Service Local Bus – Mech. City Bus
North Bennington	Local Bus – GMCN	Passenger Train – New Service Local Bus – GMCN	Passenger Train – New Service Local Bus – GMCN	Passenger Train – New Service Local Bus – GMCN	Passenger Train – New Service Local Bus – GMCN	Passenger Train – New Service Local Bus – GMCN
Manchester	Local Bus – MVRT, GMCN	Passenger Train – New Service Local Bus – MVRT, GMCN	Passenger Train – New Service Local Bus – MVRT, GMCN	Passenger Train – New Service Local Bus – MVRT, GMCN	Passenger Train – New Service Local Bus – MVRT, GMCN	Passenger Train – New Service Local Bus – MVRT, GMCN

CDTA = Capital District Transit Authority MVRT = Marble Valley Regional Transit YT = Yankee Trails

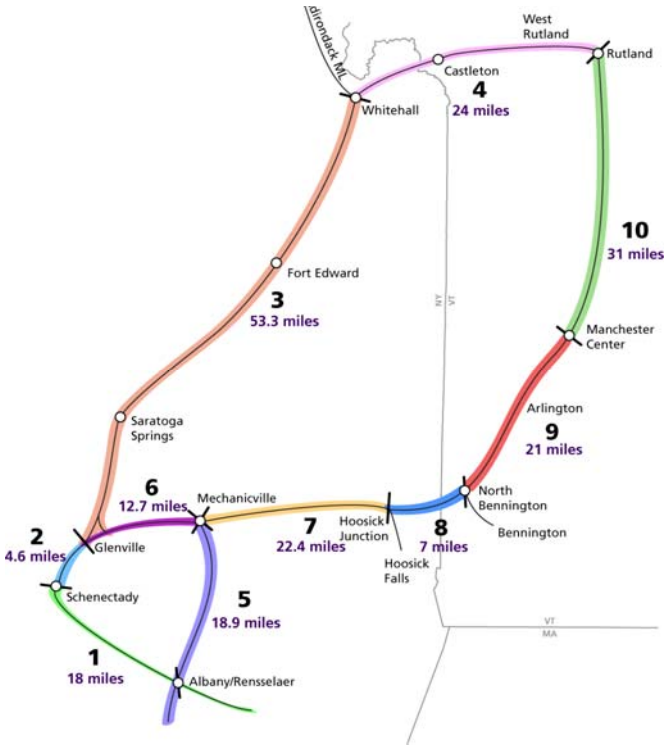
GGFT = Greater Glens Falls Transit GMCN = Green Mountain Community Network AT = Adirondack Trailways

Capital Cost Estimates

The rail corridors within the project study area being considered to accommodate the proposed alternatives include:

- Vermont Railway's (VTR) B&R Subdivision that extends between Rutland and Bennington, Vermont and from North Bennington, Vermont to Hoosick Junction, New York; and the Clarendon and Pittsford (CLP) Main Line between Whitehall, New York and Rutland, Vermont;
- Pan Am Railway's (PAR) Freight Main Line between Hoosick Junction and Mechanicville, New York;
- Canadian Pacific Rail's (CPR) Colonie Subdivision between Albany/ Rensselaer and Mechanicville, New York; the Freight Subdivision between Mechanicville and Schenectady, New York; and the Canadian Subdivision between Glenville and Whitehall, New York; and
- CSX's Hudson Subdivision between Albany/Rensselaer and Schenectady, New York.

Figure 7 Study Segments



For the purposes of the Phase One Screening, the existing rail corridors in the project study area were divided into 10 segments (Figure 7). Each segment was reviewed to determine the capital improvements necessary to accommodate one additional train per day to correspond with the assumptions of the alternatives. The proposed capital improvements are intended to bring all tracks in the study area up to FRA Class 3 standards at a minimum – such that an operating speed of up to 59 mph is feasible, where geometry and operating rules allow.

The alternatives identify ten station locations that could be included in future passenger rail service in the project study area:

- Rutland
- Manchester
- North Bennington
- Mechanicville
- Albany/Rensselaer
- Schenectady
- Ft Edwards/Glens Falls
- Saratoga Springs
- Whitehall
- Castleton

Seven of these ten locations have existing stations. Three new stations are included, one each in Manchester and North Bennington, Vermont, and Mechanicville, New York.

Table A3 summarizes the anticipated order of magnitude capital cost estimates (2011 dollars) and the relative cost impact, by alternative. The capital costs of both routings to connect Mechanicville, New York to Albany/ Rensselaer, New York are provided in Table A3 as well. Attachment 1 includes a more detailed description of the capital improvements associated with each alternative for both rail infrastructure and facilities and catalogs the order of magnitude capital cost estimate by alternative.

Table A3 – Capital Cost Summary (2011 Dollars)[1]

Alternative	Total Cost – CP Colonie Routing	Total Cost – Schenectady Routing	Relative Cost Impact[3]
1 – No-Build	$0	$0	None
2 – Loop Service[2]	$210.4	$154.7	High
3 – New Service to Manchester (Through)	$135.0	$89.7	Low
3 – New Service to Manchester (Connecting)[2]	$151.5	$106.2	Moderate
4 – New Service to Rutland (Through)	$160.1	$114.8	Moderate
4 - New Service to Rutland (Connecting)[2]	$178.7	$133.4	High
5 – Rerouted Ethan Allen Service	$160.1	$114.8	Moderate
6 – Split Shuttle Service[2]	$210.4	$154.7	High

1 Millions of dollars.
2 Includes equipment costs. The consist for services that will connect in Albany/Rensselaer is assumed to include: 1 diesel locomotive, two single-level trains, one cabbage unit.
3 Low: $0 to $99 million, Moderate: $100 million to $125 million, High: over $125 million

Operations and Maintenance Cost Estimates

Operating and maintenance costs are typically comprised of four major components: transportation, mechanical, engineering and administration. Attachment 2 describes the assumptions made regarding the operational needs to implement the proposed options and summarizes the needs of each alternative relative to the others.

Order of magnitude operations and maintenance (O&M) costs were prepared for each Alternative to provide a relative comparison of their anticipated recurring costs. Section 209 of the Passenger Rail Investment Act of 2008 (PRIIA) mandates that states pay their fair share of all short-distance Amtrak corridor services. It is anticipated that for most states this will translate to an increase in the amount they will be cover (as compared to what is currently paid). PRIAA Section 209 requires that the new cost sharing structure be in place and implemented by October 2013; therefore, any new or modified intercity passenger rail service will be subject to the requirements of this legislation. Given limited state funds, O&M costs are a major factor in deciding the feasibility of a proposed service.

For the purposes of the Phase One Screening, the O&M costs for each alternative were calculated based on the existing operating cost for the Ethan Allen service. The fully-allocated cost for operating the Ethan Allen service during Fiscal Year 2011 (9/2010-9/2011) was used to estimate an average per-mile operating cost. This per-mile cost was applied to the proposed service alternatives to calculate estimated net O&M costs based on the additional train miles for each alternative. Table A4 shows the estimated net O&M cost for both routings to connect Mechanicville, New York to Albany/Rensselaer, New York and the relative cost impact, by alternative.

Table A4 – O&M Cost Summary (2011 Dollars)[1]

Alternative	CP Colonie Routing	Schenectady Routing	Relative Cost Impact[2]
1 – No-Build	$0	$0	None
2 – Loop Service	$4.7	$5.2	Moderate
3 – New Service to Manchester	$3.1	$4.1	Moderate
4 – New Service to Rutland	$4.6	$5.6	Moderate
5 – Rerouted Ethan Allen Service	($0.2)	$0.8	Low
6 – Split Shuttle Service	$9.4	$10.5	High

1 Millions of dollars.

2 Low: 0 to $2.5 million; Moderate: $2.5 million to $7.5 million, High: Over $7.5 million.

Major points include:

- The sponsoring states will be responsible for paying their "fair share" of the new service in addition to their shares for existing short-distance corridor services. This means that the costs shown in Table 4 would be in addition other existing services (e.g. the Ethan Allen service for the State of Vermont and the Adirondack service for the State of New York).
- The estimated O&M costs for Alternative 5 – the Rerouted Ethan Allen Service – are significantly lower than the other alternatives. This is because the O&M cost estimates are calculated based on additional mileage (over the No-Build) and rerouting the Ethan Allen service through southwest Vermont results in a net gain of only 34 mile using the Schenectady routing, and a net loss of 9 miles using the CP Colonie routing.

Attachment 2 includes more detailed tables related to the O&M cost estimate calculations.

Transportation Efficiency – Performance Summary

Alternative 1 – No-Build

Alternative 1 proposes no capital improvements beyond those already committed, thus there are no anticipated impacts to existing passenger or freight rail operations. This alternative would not provide any additional intermodal connections since currently unserved areas would remain unserved.

Alternative 2 – Loop Service

Alternative 2 would provide new or improved intercity passenger rail service throughout the project study area, with potential connections to existing intermodal services. The proposed new service in southwest Vermont would provide a key link along the "Western Corridor" in Vermont, which would advance the goal of a continuous integrated rail system in New England.

This alternative can be implemented using established, active rail lines. It includes proposed rail infrastructure improvements to improve maximum allowable operating speeds and provide for additional capacity. The proposed capital improvements would be expected to be completed without impacting existing freight or passenger rail operations. Compared to the other alternatives, Alternative 2 would require higher capital costs because most of the project study segments require infrastructure improvements. This alternative proposes operating additional service on most of the project study segments. Table A-1 in Attachment 1 lists the anticipated improvements needed to accommodate additional service on each segment. Table 4 shows the aggregated costs for each

alternative. Compared to the other alternatives, the O&M costs for Alternative 2 are anticipated to be moderate and similar to those expected for Alternatives 3 and 4, given the similar daily mileage.

The proposed rail infrastructure improvements for Alternative 2 are intended to minimize impacts to existing freight and passenger rail.

Alternative 3 – New Service to Manchester

Alternative 3 would provide new intercity passenger rail service to southwest Vermont, with potential connections to existing intermodal services.

This alternative can be implemented using established, active rail lines and includes proposed rail infrastructure improvements to improve maximum allowable operating speeds. It is anticipated that the proposed capital improvements could be completed without impacting existing freight rail operations. Compared to the other alternatives, Alternative 3 is anticipated to require the lowest capital investment and the O&M costs are expected to be moderate and similar to those expected for Alternatives 2 and 4, given the similar daily mileage.

Alternative 3 is not anticipated to impact the existing freight operations and there is no existing passenger rail service in southwest Vermont.

Alternative 4 – New Service to Rutland

Alternative 4 would provide new intercity passenger rail service to southwest Vermont, with potential connections to existing intermodal services. The proposed new service in southwest Vermont would provide a key link in the "Western Corridor" in Vermont, which will advance the goal of a continuous integrated rail system in New England.

This alternative can be implemented using established, active rail lines and includes proposed rail infrastructure improvements to increase maximum allowable operating speeds. It is anticipated that the proposed capital improvements could be completed without impacting existing freight rail operations. Compared to the other alternatives, Alternative 4 is expected to require moderate capital investment and the O&M costs are projected to be moderate and similar to those expected for Alternatives 2 and 3, given the similar daily mileage.

Alternative 4 is not anticipated to impact the existing freight operations and there is no existing passenger rail service in southwest Vermont.

Alternative 5 – Rerouted Ethan Allen Service

Alternative 5 would provide new intercity passenger rail service to southwest Vermont, while reducing one round trip per day on the New York side of the study area. There would be potential new connections to existing intermodal services in Vermont, with a reduction in the opportunities for intermodal connections in Schenectady and Saratoga Springs. The proposed new service in southwest Vermont would provide a key link along the "Western Corridor" in Vermont, which would advance the goal of a continuous integrated rail system in New England.

This alternative can be implemented using established, active rail lines and includes proposed rail infrastructure improvements to improve maximum allowable operating speeds. It is anticipated that the proposed capital improvements could be completed without impacting existing freight rail operations. Compared to the other alternatives, Alternative 5 would require moderate capital investment and have the lowest impact in terms of additional O&M costs.

On the Vermont side of the study area, Alternative 5 is not anticipated to impact the existing freight operations and there is no existing passenger rail service. On the New York side of the study area, there would be a reduction in passenger rail service which will provide greater capacity for freight operations.

Alternative 6 – Split Shuttle Service

This alternative would provide new or improved intercity passenger rail service throughout the project study area, with potential connections to existing intermodal services. The proposed new service in southwest Vermont would provide a key link in the "Western Corridor" in Vermont, which would advance the goal of a continuous integrated rail system in New England.

This alternative can be implemented using established, active rail lines. It includes proposed rail infrastructure improvements to increase maximum allowable operating speeds and provide additional capacity. It is anticipated that the proposed capital improvements could be completed without impacting existing freight or passenger rail operations. Compared to the other alternatives, Alternative 6 has the highest anticipated capital investment to implement the service, since this alternative would necessitate improvements to the most analysis segments in the study area (similar to Alternative 2). Alternative 6 is anticipated to have the highest annual O&M costs since the proposed service would have the highest daily roundtrip train miles and would require two sets of additional equipment (and crews) in addition to the existing service.

The proposed rail infrastructure improvements are intended to minimize impacts to existing freight and passenger rail; however, additional passenger

service on the New York side of the study area could lead to capacity issues depending on projected future freight traffic.

A.2.4 Economic/Sustainable Development

During the Phase One screening, the main factor considered in evaluating how well the proposed alternatives will support the economic development and sustainable development goals of the project was the potential for providing an attractive, convenient option to access activity centers and commercial hubs in the study area. The ridership forecasts, presented in detail in Section A.3, provide a good indication of that potential to circulate residents throughout the study area and the potential to bring in visitors into the region.

Alternative 1 – No-Build

Alternative 1 is anticipated to do little to support improved economic development or sustainable development in the project study area. The continued lack of access to intercity passenger rail in a significant portion of the study area will continue to limit the connectivity to activity centers and commercial hubs for both residents and visitors in western Vermont. Alternative 1 does not improve freight rail capacity or speeds.

Alternative 2 – Loop Service

By extending intercity passenger rail service into southwest Vermont, Alternative 2 would improve connectivity to activity centers and commercial hubs throughout the project study area; however, the loop routing would likely be an unattractive choice to riders, limiting economic and sustainable development opportunities.

The infrastructure improvements that would be required to implement Alternative 2 could also translate to economic benefits for freight service via potential improved freight travel times and increased capacity.

Alternative 3 – New Service to Manchester

Alternative 3 is anticipated to improve connectivity to activity centers and commercial hubs in the vicinity of the proposed new service, especially near the proposed new stations in Mechanicville, North Bennington and Manchester. The lack of a direct link between Manchester and Rutland, however, would likely limit economic and sustainable development opportunities. The impacts of the link between Manchester and Rutland are evident in the ridership analysis – Alternative 3 has a significantly lower forecast ridership than does Alternative 4, which includes the connection to Rutland.

The infrastructure improvements that would be required to implement Alternative 3 could also translate to economic benefits for freight service to Manchester and Bennington via potential improved freight travel times and increased capacity.

Alternative 4 – New Service to Rutland

Alternative 4 is anticipated to improve connectivity to activity centers and commercial hubs near the proposed new service area, especially near the proposed new stations in Mechanicville, North Bennington, Manchester, and Rutland. It is anticipated to have good potential to support economic and sustainable development opportunities due to improved connectivity in southwest Vermont and efficient routing; Alternative 4 is forecast to have the highest increase in ridership by the horizon year of 2030.

Alternative 4 would also impart economic benefits to freight service in southwest Vermont via proposed rail infrastructure improvements to allow for greater operating speeds and increased capacity.

Alternative 5 – Rerouted Ethan Allen Service

Alternative 5 is anticipated to improve connectivity to activity centers and commercial hubs in proximity to the proposed new service area, especially near the proposed new stations in Mechanicville, North Bennington, Manchester, and Rutland. The impacts of the reduction in service at several of the stations served by the Ethan Allen current routing of the Ethan Allen may not be as severe as indicated by the ridership projection for this alternative as compared to the others. The forecast ridership for Alternative 5 is the lowest for the build alternatives that were modeled; however, it should be noted that the riders at the stations that would lose a frequency of service with this Alternative would continue to have options to access rail service either via other Amtrak services (the Adirondack in the case of the Fort Edward and Saratoga Springs stations) or by accessing a nearby station (Rutland Station, which is 13 miles from Castleton).

Alternative 5 would impart limited economic benefits to freight service in Southwest Vermont via proposed rail infrastructure improvements to allow greater operating speeds; removing the two trains per day for passenger service on some of the current Ethan Allen rail segments may also benefit travel times and increased capacity for freight service on those segments.

Alternative 6 – Split Shuttle Service

Alternative 6 is anticipated to provide connectivity to activity centers and commercial hubs throughout the project study area. It is anticipated to have good potential to support economic and sustainable development opportunities due to improved connectivity in southwest Vermont, and an additional

frequency of passenger service on the New York side of the study area; however, the fact that this would be a connecting service (at Albany/Rensselaer) rather than a through service limits the attractiveness of the option. The forecast ridership for this alternative is significantly lower than the ridership forecast for Alternative 4 – likely due to the penalty that riders tend to place on having to make a rail connection, which can be inconvenient and diminish time savings over other travel options. This penalty and the subsequent negative impact on ridership would reduce the benefit of Alternative 6 on economic development.

Alternative 6 would also impart economic benefits to freight service throughout the study area via proposed rail infrastructure improvements to allow for greater operating speeds and increased capacity.

A.2.4 Environmental Quality

Both the Vermont and New York State Rail Plans identify one of their missions as promoting environmental responsibility in the overall transportation system, thereby contributing to environmental sustainability and quality of life. At this level of review, the factors considered to gauge whether the proposed alternatives support the environmental quality goals of the region consisted of a desktop review, using existing GIS data and other available information, to determine if the alternatives will have apparent potential positive or negative impacts within the study area.

For the purposes of the environmental review, the same 10 analysis segments presented previously were used. Each segment was reviewed to determine the potential environmental impacts that would occur based on the additional frequency of train service proposed by each of the alternatives. In short, the analysis shows that, because the alternatives use existing infrastructure, environmental effects would be minimal and consistent with the goals of maintaining environmental quality.

Table A13 in Attachment 3 summarizes the anticipated impacts along each of the analysis segments. In general, the greatest potential for significant environmental impacts is expected along Segment 5, specifically those impacts that will come from reconstructing the wye connections at the north and south end of the segment. If the CP Colonie were used as the routing from Mechanicville, New York to Albany/Rensselaer, Segment 5 would be common to all of the proposed alternatives. This being the case, the environmental impacts associated with Segment 5 are not a differentiator between the various alternatives; however, these impacts will be taken into account as the final routing is chosen from Mechanicville, New York to Albany/Rensselaer (during Phase Two). Environmental impacts will be further discussed as part of the environmental (NEPA) documentation for this study.

A.3 Alternatives Screening using Evaluation Criteria

Table 5 indicates how each proposed alternative performs in relation to the identified evaluation criteria. It should be noted that each alternative is evaluated *in comparison to the other alternatives* to identify which alternatives have the best potential to satisfy the project Purpose and Need. Based on the outcomes of the initial market analysis, the estimated capital and O&M requirements and costs for each alternative, and a comparison of the alternatives to each other with regards to the anticipated transportation and connectivity benefits each could have based on the proposed routings, each alternative has been assigned a "Positive", "Negative" or "Neutral" impact for each criteria using the symbols indicated in Table 5.

Table A5 includes a summary of the evaluation rankings for all of the alternatives; tables A14 through A19 in Attachment 4 include brief justifications describing why each alternative received a particular ranking.

Table A5 - Evaluation Rankings Summary

Screen One Criteria As compared to the other alternatives, would the proposed alternative:	Alternatives					
	Alt. 1 – No- Build	Alt. 2 – Loop Service	Alt. 3 – New Service to Manchester	Alt. 4 – New Service to Rutland	Alt. 5 – Rerouted Ethan Allen Service	Alt. 6 – Split Shuttle Service
Rail Access and Mobility						
Improve regional mobility and rail access to key destinations within the project study area?	○	◉	◉	●	◉	●
Lead to travel time savings for potential passengers, as compared to existing travel modes (i.e. rail, car, bus)?	○	○	◉	●	◉	●
Provide a frequency of service and/or routing that would make it an attractive transportation option?	○	○	◉	●	◉	●
Transportation Efficiencies						
Provide viable and useful intermodal connections?	○	◉	◉	●	●	●
Be generally cost efficient in terms of order of magnitude costs?	●	○	●	◉	●	○
Maximize use of the existing infrastructure?	◉	●	●	●	●	●
Minimize impacts on existing freight and passenger rail operations (post implementation)?	◉	○	●	●	●	○
Require supporting infrastructure that can be built with minimum impact on the operations of existing freight and passenger rail services during construction?	◉	◉	◉	◉	◉	◉
Economic/Sustainable Development						
Support or promote opportunities for Smart Growth & Economic Development?	○	○	◉	●	◉	●
Environmental Quality						
Minimize potential environmental impacts?	◉	◉	◉	◉	◉	◉
Result in any potentially positive environmental impacts?	◉	◉	◉	◉	◉	◉

● = Potential Positive Impact ◉ = No/Neutral Impact ○ = Potential Negative Impact

Preliminary Screening

Following the first stage of assessment summarized in the preceding sections; it was determined that ridership forecasts were a critical and should be developed to support the Phase One evaluation of alternatives. Although all of the proposed build alternatives were screened as part of the previously discussed analyses, it was determined that Alternative 2 would be eliminated from further consideration prior to development of the ridership model.

After the preliminary screening of the alternatives, it was determined that Alternative 2 should be removed from consideration because other alternatives (Alternatives 4 and 6) offered the same level of access to rail throughout the study region, while offering a routing that would be more attractive for riders. The single-direction loop routing of Alternative 2 would be inconvenient for many of the trip pairs in the region (e.g. For a counter-clockwise routing for Alternative 2, travelers from Albany to N. Bennington would be offered a convenient route but the return trip would be significantly less convenient – requiring riders to travel through Rutland, and around the loop to return back to Albany. Similar issues would occur for a clockwise routing for Alternative 2.), and a bi-directional routing (with two trains, one in each direction) is infeasible because of the operating and maintenance costs that would be associated with such a service. For these reasons, no ridership projection was prepared for Alternative 2. The remaining alternatives were all evaluated for their ridership potential before concluding the Phase One screening.

Ridership Projections

Ridership forecasts were prepared for both routings from Mechanicville, New York to Albany/Rensselaer; Tables A6 and A7 show the resulting forecasts.

Table A6 - Annual Ridership Forecasts[1] (Schenectady Routing)

STATION	FORECAST RIDERSHIP (2030)[1]					
	2010 Baseline	No-Build	ALT 3	ALT 4	ALT 5	ALT 6
Montreal - Ft. Ticonderoga	5,200	5,700	5,700	5,700	5,700	5,700
Rutland	8,100	11,800	11,000	15,600	15,900	11,900
Castleton	1,300	1,800	1,900	1,900	0	2,000
Whitehall	900	1,000	1,000	1,000	1,000	1,000
Fort Edward/Glens Falls	4,300	4,600	4,700	4,700	3,600	4,800
Saratoga Springs	15,100	16,600	16,800	16,800	12,900	17,100
Schenectady	8,100	8,400	9,000	9,000	8,800	9,400
Manchester	--	--	3,100	3,300	3,400	3,000
N. Bennington	--	--	4,600	4,800	5,200	4,400
Mechanicsville	--	--	3,500	3,500	3,700	3,200
Albany/Rensselaer	3,200	3,400	3,400	3,600	3,500	3,400
Hudson – NY Penn	32,400	35,900	44,200	47,300	43,300	44,000
TOTAL	78,600	88,200	108,900	116,200	107,000	109,900
Incremental over No-Build	--	--	20,700	28,000	18,800	21,700

1 One-way boardings.

Table A7 - Annual Ridership Forecasts[1] (CP Colonie Routing)

STATION	FORECAST RIDERSHIP (2030)[1]					
	2010 Baseline	2030 No-Build	2030 ALT 3	2030 ALT 4	2030 ALT 5	2030 ALT 6
Montreal - Ft. Ticonderoga	5,200	5,700	5,700	5,700	5,700	5,700
Rutland	8,100	10,800	11,000	15,600	17,000	12,700
Castleton	1,300	1,800	1,900	1,900	0	2,000
Whitehall	900	1,000	1,000	1,000	900	1,000
Fort Edward/Glens Falls	4,300	4,600	4,700	4,700	3,600	4,800
Saratoga Springs	15,100	16,600	16,800	16,800	12,900	17,100
Schenectady	8,100	8,400	9,000	9,000	8,800	9,400
Manchester	--	--	3,700	3,800	3,800	3,400
N. Bennington	--	--	5,700	5,900	5,900	4,900
Mechanicsville	--	--	4,200	4,200	4,200	3,600
Albany/Rensselaer	3,200	3,400	3,400	3,700	3,600	3,500
Hudson – NY Penn	32,400	35,900	47,200	51,000	46,300	46,000
TOTAL	78,600	88,200	114,200	123,300	112,700	114,100
Incremental over No-Build	--	--	26,000	35,100	24,500	25,900
Incremental over Schenectady Routing	--	--	5,700	7,100	5,700	4,200

1 One-way boardings.

Tables A6 and A7 show the forecasts of the ridership at each station within the study area. The figures in the tables represent the anticipated ridership (boardings) on ALL (existing and proposed) intercity passenger rail services at each stop; and therefore include, as appropriate, the expected ridership on the Ethan Allen service, the Adirondack service and the proposed new service. The ridership forecasts are another tool to help differentiate among the alternatives and identify which alternatives show the greatest potential benefit. At the bottom of each table is a row that indicates the incremental increase in ridership that the Alternative produces over and above the No-Build alternative; Table 6 also includes a row indicating the forecast additional ridership using the CP Routing rather than the Schenectady Routing from Mechanicville, New York to Albany/Rensselaer.

Forecast Reasonableness Check

The reasonableness check of the ridership projections was made by examining another method of evaluating ridership potential, specifically ridership resulting from visitation. Visitors are a major factor in Vermont's economy and the ability of each alternative to provide access for visitors is an important consideration. The visitation analysis presented below is intended to assess whether the ridership forecast by the model is reasonable in light of observed past rail ridership based on visitation.

Because Vermont already has intercity rail service to numerous resort destinations, a review of the performance of Amtrak service relative to observed visitors was considered a valid method of assessing rail ridership. Of the stations Amtrak serves in Vermont the stations selected for this analysis were:

- Essex Junction
- Randolph
- Rutland
- St. Albans
- Waterbury
- Montpelier Junction

Table A8 provides the number of boardings and alightings reported at the selected Amtrak stations in Vermont in 2007. Waterbury and Montpelier Junction are combined because they are both located in Washington County.

Table A8 - Boardings and Alightings at Selected Vermont Amtrak Stations

Station	Riders On	Riders Off	Total On's & Off's
Essex Junction	5,999	6,269	12,268
Randolph	621	677	1,298
Rutland	8,065	8,237	16,302
St. Albans	1,255	1,052	2,307
Waterbury and Montpelier Junction	4,094	4,101	8,195
TOTALS	20,034	20,336	40,370

Stations that abut adjacent states were omitted because the analysis depends on knowing the number of visitors, and visitor information for adjacent counties in neighboring states was not available.

The most recent study of Vermont visitation that provided sufficient detail for this analysis is "The Travel and Tourism Industry in Vermont" published in 2008 by the Vermont Department of Tourism and Marketing and based on 2007 data. This report indicated that 59% of all visitors spent one or more nights in Vermont in 2007. Since visitors are very unlikely to use rail to make a day-trip (partly due to when the trains arrive and depart and also due to the travel time entailed), this means the visitor market potentially served by rail is around 59% of the total visitor market.

The number of visitors to each Vermont County in 2007 is provided in Table A9 along with the calculation of overnight visitors and the resulting number of trips both entering and leaving Vermont (two per visitor). The result is a rough estimate of the number of visitor trips to and from each county in 2007.

Table A9 - Visitors, Overnight Visits and Trips in 2007 by County

County	2007 Visitors	Overnight	Trips To and From
Addison	423,932	250,120	500,239
Orange	167,667	98,923	197,847
Bennington	979,079	577,656	1,155,313
Caledonia	250,665	147,892	295,785
Chittenden	2,602,284	1,535,348	3,070,695
Essex/Orleans	336,461	198,512	397,024
Franklin/Grand Isle	399,461	235,682	471,364
Lamoille	1,409,406	831,549	1,663,099
Rutland	1,348,455	795,589	1,591,177
Washington	722,744	426,419	852,838
Windham	1,000,579	590,342	1,180,683
Windsor	1,419,557	837,539	1,675,077

Assuming all of the reported Amtrak on's and off's were visitors (a liberal assumption), Table A10 calculates the percentage of visitor trips that were potentially made using Amtrak service. The overall average is 0.57% and the percentage for Rutland is 1.02%. Rutland is most relevant because it is in the Western Corridor, already has Amtrak service, and will be a part of whichever alternative is selected.

Table A10 - Rail On's and Off's vs. Visitor Trips

Station	County	Relevant Visitor Trips	Total On's and Off's	Rail as % of Total
Essex Junction	Chittenden	3,070,695		0.40%
Randolph	Orange & Addison	698,086	1,298	0.19%
Rutland	Rutland	1,591,177	16,302	1.02%
St. Albans	Franklin	471,364	2,307	0.49%
Waterbury and Montpelier Junction	Washington	852,838	8,195	0.96%
Total		8,389,836	40,370	0.57%

According to a tourism analyses provided by the Vermont Department of Tourism and Marketing using 2007 data, Bennington County had 979,079 visitors. Adjusting for the percent of visitors likely to have remained overnight (59%), and counting their trips both to and from Bennington County would represent 1,155,313 trips. Therefore, if there were rail service to Bennington County and the 0.57% to 1% of the visitors elected to use rail service to visit, from 6,585 to 11,553 of those visitors to Bennington County would arrive by rail.

The projected ridership level of Bennington County stations (Manchester and North Bennington) ranged from 7,400 to 9,700, well within the range experienced by other Vermont visitor destinations.

To understand Rutland's performance as compared to Manchester and North Bennington it is useful to recall that riders of an intercity rail service will be predominantly people who drive (or take a shuttle bus from a resort) to the station. An extremely small percentage will walk, unlike those using urban transit systems to go to work on a daily basis. This means the catchment area for intercity passenger rail service will be much larger than would be the case with urban transit systems.

In the Western Corridor the roads and topography create a true corridor situation – with the Vermonter and Adirondack lines bounding the east and western edges of the catchment area for all of the Western Corridor stations. As noted, the northern end of the potential service area would extend into Addison County while it would be bounded to the north east by Vermonter service to Montpelier and Waterbury.

The Rutland catchment area is significantly larger than that of Manchester or North Bennington, extending to the north and east and including Addison County. For Manchester/North Bennington the catchment area is bounded by the same mountains that define the Western Corridor to the east and west, while Rutland to the north competes for visitors, limiting Bennington County's stations catchment area in that direction.

In short, the Rutland Station serves a larger area and more resorts. Whether the riders live in Vermont or visit Vermont the catchment area of the stations will reflect the same constraints and the Rutland Station will have a much larger

catchment area.

Table A11 shows the approximate travel times to Western Corridor stations and Vermonter stations.

Table A11 - Travel Times to Western Corridor Resorts

Resort	Amtrak Vermonter Station	Travel Time (minutes)	Western Corridor Station	Travel Time (minutes)
Pico Mountain	White River Junction	57	Rutland	33
Okemo	Windsor	48	Rutland	38
Bromley	Bellows Falls	51	Manchester	11
Magic Mountain	Bellows Falls	38	Manchester	28
Stratton	Brattleboro	55	Manchester	28
Mount Snow	Brattleboro	49	North Bennington	60

The only resort of those selected that would be unlikely to use a Western Corridor station is Mount Snow, which would still be closer to Brattleboro than North Bennington.

Table A12 shows the travel projections, the annual number of visitors by county for 2007, and the 2010 population.

Table A12 - Alternative 5 Ridership, County Population and Visitation Statistics

Ridership Projection	Alternative 5 Riders	2007 Visitors	2010 Population
Rutland County	15,900	1,348,455	61,642
Addison County		432,900	36,821
Rutland and Addison Counties	15,900	1,781,355	98,463
Bennington County	8,600	979,079	37,125
Bennington/Rutland	54%	73%	60%
Bennington/(Rutland + Addison)	54%	55%	38%

The percentage of rail trips projected to come to Bennington County is comparable – and almost identical – when Addison County is included with Rutland to the percentage of visitors. The percent of population in Bennington is smaller than the ridership split between Rutland and Bennington, so the projections actually project more riders than population alone would explain.

Finally, the adjacent station to the south and west of North Bennington, Mechanicville, will split the market between the two stations to some degree, limiting its catchment area with respect to what Rutland now has.

At this level of analysis it is unwise to focus on individual stations projections. The use of this information is to assess the performance between the alternatives, not between stations.

The factors that affect ridership include at least:

- Visitation – the number of visitors to Vermont who come to recreate
- Population, households and employment – the number of people and jobs in the service area
- Competing modes – the ease and cost of travel by other travel means

Of these factors the demographic measures of population and households and the characteristics of the transportation system were readily available for use in projecting travel in the study area for the future years needed for this analysis. The competing modes were also used in making the projections as measured by changes in travel times as projected. The underlying assumption in using demographic measures and travel times is that they are, themselves, driven by other factors, including visitors. While it would be possible to develop estimates of future visitation based on population of the markets served, projections into the distant future of visitation do not exist at least in part because the number of variables affecting visitation are inherently unpredictable over the long term. as the number of visitors Vermont experiences is affected by the economy, fuel costs, larger demographic trends (E.G. age distribution of the population), the presence of alternative competing destinations and even the weather. For this reason it was decided that while visitors are clearly the major factor affecting rail travel to Vermont, it could not be used as the basis for the projections needed for this study.

The conclusion of this assessment, using historic visitation and rail travel figures, is that the ridership projections generated by the model are reasonable.

A.4 Alternatives Advancing to the Phase Two Screening

The section provides a brief summary of the major advantages and disadvantages for each of the Phase One alternatives, as well as recommendations regarding which alternatives should advance into the Phase Two Screening.

Alternative 1 – No-Build

The main advantage of the No-Build Alternative is that it has no implementation costs (capital or operating) associated with it. The major disadvantage of the No-Build Alternative is that those areas currently lacking intercity passenger rail service will continue to be unserved.

The No-Build Alternative will be carried through the two-phase screening process to meet NEPA requirements.

Alternative 2 – Loop Service

Although Alternative 2 would provide new service to currently unserved areas in southwest Vermont, it was determined early in the process that the loop routing would prove to be inefficient and, therefore, unattractive to potential choice riders. Alternative 2 would also be one of the most expensive alternatives to implement, since capital improvements would be required on most of the analysis segments throughout the study area by this alternative.

In consultation with the Project Management Team, Alternative 2 was eliminated from further consideration prior to developing ridership projections. The alternative was eliminated because potential negative impacts are expected for five of the eleven Phase One criteria, while a positive impact is expected for only one.

Alternative 3 – New Service to Manchester

Alternative 3 would provide new service to Bennington County (with stations in Manchester and North Bennington); however the lack of connectivity between Manchester and Rutland has been criticized by project stakeholders who note the substantial demand for travel between these two areas. The impact of the missing Manchester-Rutland ridership link is apparent in the ridership forecast; Alternative 3 is anticipated to produce the second lowest increase in ridership, better only than Alternative 5 which actually removes service from a portion of the study area.

This alternative is anticipated to require the lowest capital cost expenditure (since the service area, and therefore amount of track that needs to be improved,

is smaller than the other build alternatives); however, a maintenance facility would be required if Manchester is used as a terminal stop. This maintenance facility would be abandoned if the service were eventually extended to Rutland. The anticipated operating costs for Alternative 3 are moderate compared to the other build alternatives.

While no negative impacts are expected for any of the Phase One screening criteria, it is recommended that this alternative be removed from consideration and not move on to the Phase Two Screening. The lack of the rail connection between Manchester and Rutland is a key stakeholder concern, and that connection is addressed by other alternatives without the need to construct a new maintenance facility that could ultimately be abandoned.

Alternative 4 – New Service to Rutland

Alternative 4 would provide new service to Rutland and Bennington Counties and provide a key link along Vermont's Western Corridor which has been identified as a key rail corridor for the state. Alternative 4 supports the goals and objectives stated in the project Purpose and Need and the anticipated capital and operating costs are moderate compared to the other alternatives. This alternative is also forecast to produce the greatest increase in annual ridership.

Alternative 4 is expected to have no negative impacts on any of the Phase One screening criteria; positive impacts are expected for six. It is recommended that Alternative 4 move forward into the Phase Two Screening for further evaluation.

Alternative 5 – Rerouted Ethan Allen Service

Alternative 5 would provide new service to Rutland and Bennington Counties and provide a key link along Vermont's Western Corridor which has been identified as a key rail corridor for the state. This alternative is estimated to have the lowest operating cost of all of the build alternatives. The operating cost is a key consideration for the State of Vermont, which already sponsors the Ethan Allen and the Vermonter services.

The major disadvantage of Alternative 5 is that it would reduce service from portions of the New York side of the study area. This alternative is projected to produce the smallest increase in annual ridership – likely due to the reduction of service in a portion of the study area.

Alternative 5 is not expected to have negative impacts for any of the Phase One screening criterion, and positive impacts are expected for four. Given the importance of operating costs for the longevity of any service that is implemented, Alternative 5 is recommended to be carried forward to the Phase Two Screening for further evaluation.

Alternative 6 – Split Shuttle Service

Alternative 6 will provide new service to Rutland and Bennington Counties and increased service to the New York portion of the study area. This alternative is projected to produce the second highest increase in annual ridership. Despite the additional service in New York for Alternative 6, which proposes connecting service in Albany/Rensselaer, Alternative 4 has higher ridership projections because it proposes through service at Albany/Rensselaer.

Due to the wide coverage Alternative 6 proposes, capital improvements would be required on most of the analysis segments by this alternative – making it one of the most expensive from a capital cost perspective. Alternative 6 would also have the highest operating cost of all the build alternatives.

Alternative 6 would have negative impacts for two of the Phase One screening criteria; positive impacts are expected for six. It is recommended that Alternative 6 be removed from consideration and not move on to the Phase Two Screening.

Summary of Recommendations

From the initial set of alternatives the two Build Alternatives are recommended to advance to the Phase Two Screening process:

- Alternative 4 – New Service to Rutland
- Alternative 5 – Rerouted Ethan Allen Service

These two alternatives are recommended to move forward to the Phase Two analyses because, based on their performance in the Phase One Screening, they exhibit the greatest potential to satisfy the project Purpose and Need. During the Phase Two analysis, operating plans, operational analysis and refined capital and operating/maintenance costs will be developed for these two alternatives and the No-Build Alternative. Each alternative will also be subject to an environmental review sufficient to prepare environmental documentation that will satisfy NEPA requirements.

The routing from Mechanicville, New York to Albany/Rensselaer will be finalized during the Phase Two Screening process. An early action item in the next phase will be a meeting with CP Rail to confirm the infrastructure assumptions and order of magnitude capital costs associated with the Colonie and Schenectady routing options.

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A-1

Attachment 1 – Capital Cost Assumptions

1 Capital Cost Assumptions

The existing rail corridors within the project study area that are being considered to accommodate the proposed alternatives include:

- Vermont Railway's (VTR) B&R Subdivision that extends between Rutland and Bennington, Vermont and from North Bennington, Vermont to Hoosick Junction, New York; and the Clarendon and Pittsford (CLP) Main Line between Whitehall, New York and Rutland, Vermont;
- Pan Am Railway's (PAR) Freight Main Line between Hoosick Junction and Mechanicville, New York;
- Canadian Pacific Rail's (CPR) Colonie Subdivision between Albany/Rensselaer and Mechanicville, New York; the Freight Subdivision between Mechanicville and Schenectady New York; and the Canadian Subdivision between Glenville and Whitehall, New York; and
- CSX's Hudson Subdivision between Albany/Rensselaer and Schenectady, New York.

The following sections include a description of the types of capital improvements, for both rail infrastructure and facilities that have been identified as being necessary to implement the proposed alternatives; and catalog the order of magnitude capital cost estimates by alternative.

1.1 Rail Infrastructure

For the purposes of the Phase One Screening, the existing rail corridors in the project study area are divided into 10 segments, shown in Figure 1. Each segment was reviewed to determine the capital improvements necessary to accommodate additional passenger service; specifically one additional per day to correspond with the assumptions of the alternatives.

The conceptual analysis identified capital improvements that will increase capacity on the potential host railroads and allow for a proposed maximum operating speed (MAS) of 59 miles per hour (mph) for passenger operations. Table 1 indicates the types of capital improvements (including reconstruction of existing track, construction of new passing sidings, lengthening of existing passing sidings, and bridge reconstruction, as appropriate) have been assumed along each segment; Table 2 includes a breakdown of the capital cost estimate for each segment.

As noted in Table 2, Segment 5 – if used – would require the greatest capital expenditure to make the proposed routings feasible. The major investments on this segment include:

- Construction of a grade-separated connection between the CP Colonie Subdivision and the CSX Hudson Subdivision at the south end of Segment 5; and

- Construction of a wye connection between the CP Colonie Subdivision and the Pan Am Freight Mainline, to allow for the northbound to eastbound movement, at the north end of Segment 5.

Figure 1: Analysis Segments

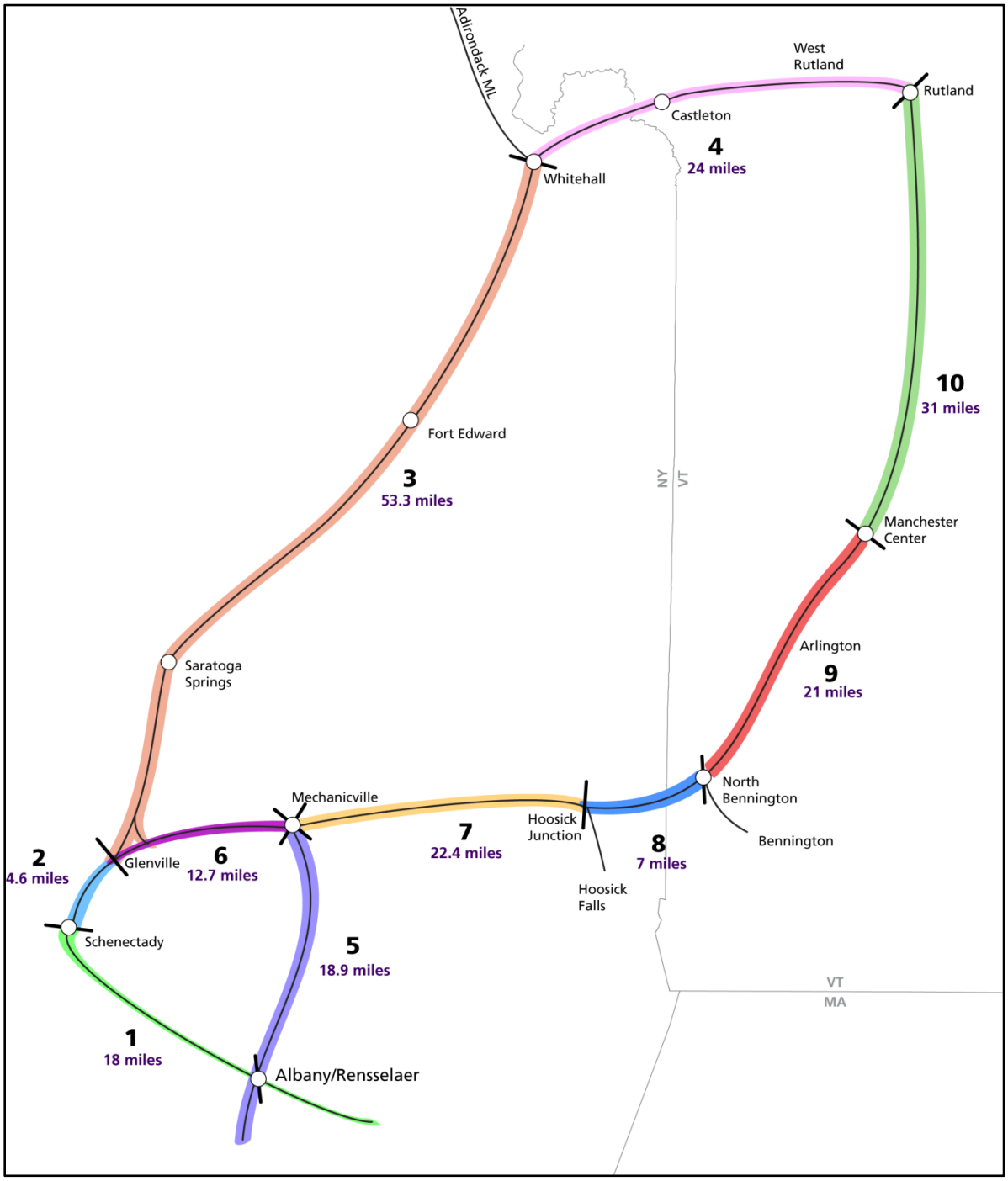

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Table 1 - Proposed Rail Infrastructure Improvements

Segment	Length (mi)	Line Segment			Included in Alternative						Anticipated Infrastructure Improvements/Assumptions
		Railroad	From	To	NB	2	3	4	5	6	
1	18	CSX	Schenectady	Albany		X	X	X	X	X	Assume no improvements required
2	4.6	CPR	CPF 480	Schenectady		X	X	X	X	X	• 2 miles of new sidings for congestion relief. • All existing public grade crossings will require warning system modifications. • No track work required on existing mainline; 50-foot wide crossings. • Signal system costs assume electronic in-track signal system and interlocking tie-ins.
3	53.3	CPR	Whitehall	CPF 480		X				X	• 3 miles of new siding track in Glenville, New York area. • 5 miles of mainline track requires upgrading; all existing public grade crossings will require warning system modifications.
4	24	CLP (VRS)	Rutland	Whitehall		X				X	• Wayside signal system on single mainline track with no sidings. • All existing public grade crossings will require warning system modifications.
5	18.9	CPR - Colonie	Mechanicville	Albany		X	X	X	X	X	• Every 3rd tie is replaced, 50% of segment requires additional surfacing and aligning of curvature to meet increased speeds. • Wye reconstruction of 1 mile of new track; new bridge across river; extend sidings with 2 miles of new track; 50-foot wide crossings. • Construct the connection between the CP Colonie Subdivision and the CSX Hudson Subdivision. • All existing public grade crossings will require warning system modifications.
6	12.7	CPR	Mechanicville	CPF 480		X	X	X	X	X	• 6 miles of new sidings for congestion relief. • All existing public grade crossings will require warning system modifications. • No track work required on existing mainline; 50-foot wide crossings • Signal system costs assume electronic in-track signal system and interlocking tie-ins.
7	22.4	PAR	Hoosick	Mechanicville		X	X	X	X	X	• 1 new 2-mile long siding midline; assume 2 existing sidings need no work. 50-foot wide crossings. • Updates to existing signal system. • All existing public grade crossings will require warning system modifications.
8	7	VTR (VRS)	North Bennington	Hoosick		X	X	X	X	X	• Existing mainline needs upgrading over entire length; 50-foot wide crossings. • Every 3rd tie is replaced, 50% of segment requires additional surfacing and aligning of curvature to meet increased speeds. • All existing public grade crossings will require warning system modifications. • No additional sidings required, bridge costs assumed only for bridges assessed to be in poor condition.
9	21	VTR (VRS)	Manchester	North Bennington		X	X	X	X	X	• Existing mainline needs upgrading over entire length; 50-foot wide crossings. • All existing public grade crossings will require warning system modifications. • Every 3rd tie is replaced, 50% of segment requires additional surfacing and aligning of curvature to meet increased speeds. • Upgrades to 1 existing siding (~2 miles); • Bridge costs assumed only for bridges assessed to be in poor condition. • Assumes VTR will allow passenger service without new signal system.
10	31	VTR (VRS)	Rutland	Manchester		X		X	X	X	• Existing mainline needs upgrading over entire length; 50-foot wide crossings. • All existing public grade crossings will require warning system modifications. • Every 3rd tie is replaced; 50% of segment requires additional surfacing and aligning of curvature to meet increased speeds. • Upgrades to 1 existing sidings (~2 miles); • Bridge costs assumed only for bridges assessed to be in poor condition. • Assumes VTR will allow passenger service without new signal system.

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Table 2 - Analysis Segment Cost Breakdown

	New Siding Track		Upgrade Mainline Track		Upgrade Siding Track		Signal System	Grade Crossing - Public		Grade Crossing - Private		Grade Crossing - Warning System		Grade Crossing Signage -All		Undergrade Bridges		Grade Separation	Total[1]
	$215	TF	$60	TF	$50	TF	LS	$3,000	TF	$5,000	EA	$200,000	EA	$5,000	LS	$500,000	EA		
	Quant.	Cost	Quant.	Cost	Quant.	Cost		Quant.	Cost	Quant.	Cost	Quant.	Cost	Quant.	Cost	Quant.	Cost		
Segment 1 - CSX (Schenectady-Albany)	0	$0	0	$0	0	$0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	$0	$0
Segment 2 - CPR (CPF 480-Schenectady)	10,000	$2,150,000	0	$0	0	$0	$4,000,000	150	$450,000	0	$0	3	$600,000	3	$15,000	0	$0	$0	$7,215,000
Segment 3 - CPR (Whitehall-CPF 480)	15,000	$3,225,000	25,000	$1,500,000	0	$0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	$0	$4,725,000
Segment 4 - CLP (Rutland-Whitehall)	0	$0	0	$0	0	$0	$5,000,000	0	$0	0	$0	24	$4,800,000	0	$0	0	$0	$0	$9,800,000
Segment 5 - CPR (Mechanicville-Albany)	0	$0	99,792	$5,987,520	0	$0	$0	2,100	$6,300,000	4	$20,000	42	$8,400,000	46	$230,000	0	$0	$35,000,000	$55,937,520
Segment 6 - CPR (Mechanicville-CPF 480)	31,680	$6,811,200	0	$0	0	$0	$8,000,000	300	$900,000	2	$10,000	6	$1,200,000	8	$40,000	0	$0	$0	$16,961,200
Segment 7 - PAR (Hoosick-Mechanicville)	10,000	$2,150,000	0	$0	0	$0	$4,000,000	500	$1,500,000	7	$35,000	10	$2,000,000	17	$85,000	0	$0	$0	$9,770,000
Segment 8 - VTR (No. Bennington-Hoosick)	0	$0	36,960	$2,217,600	0	$0	$0	300	$900,000	5	$25,000	6	$1,200,000	11	$55,000	2	$1,000,000	$0	$5,397,600
Segment 9 - VTR (Manchester-N. Bennington)	0	$0	110,880	$6,652,800	10,000	$500,000	$0	800	$2,400,000	21	$105,000	16	$3,200,000	37	$185,000	9	$4,500,000	$0	$17,542,800
Segment 10 - VTR (Rutland-Manchester)	0	$0	163,680	$9,820,800	10,000	$500,000	$0	1050	$3,150,000	57	$285,000	21	$4,200,000	78	$390,000	5	$2,500,000	$0	$20,845,800

1 Base material and labor costs only. No contingencies included.

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1.2 Facilities

The alternatives described in the previous section identify ten station locations that could be included in future Amtrak service in the project study area:

- Rutland
- Manchester
- North Bennington
- Mechanicville
- Albany/Rensselaer
- Schenectady
- Ft Edwards/Glens Falls
- Saratoga Springs
- Whitehall
- Castleton

Seven of the ten locations have existing stations. Table 3 identifies the key station components for these seven existing stations. Three new stations are proposed in Manchester and North Bennington, Vermont, and Mechanicville, New York.

Table 3 - Existing Station Data[1]

Station	Staff	Building/ Waiting Area	Parking	Platform	ADA Accessibility
Rutland	Unstaffed	Building & waiting area	5 short-term, 30 long-term	Low level 200' +/-	Mini-High
Castleton	Unstaffed	Building	5 +/-	Low level 30' +/-	None
Whitehall	Unstaffed	Sheltered waiting area	3 short-term, 3 long-term	Low level 100' +/-	None[3]
Fort Edward	Unstaffed	Building	4 short-term, 10 long-term	Low level 100' +/-	None[3]
Saratoga Springs	Staffed	Building	40 short-term, 40 long-term	Low level 600' +/- (2 tracks)	Wheelchair Lifts[3]
Schenectady	Staffed	Building	20 short-term, 30 long-term	Low level 600' +/- [2]	None[3]
Albany/ Rensselaer	Staffed	Building	Garage	Multiple elevated platforms	High level platforms

1 Existing station data is based on ridership data and photographs in the field.

2 Double-sided platform with canopy.

3 Plans to improve accessibility in progress.

The following general assumptions were used as a basis of the cost estimates.

- All of the stations, both existing and new, will be modified or built to meet current Amtrak station and ADA standards. Amtrak station design standards are shown in Figure 2.
- New stations will serve less than 4,000 annual passengers, qualifying them as Classification V stations, based on Amtrak station classifications.
- Platform lengths at the new station will be built to accommodate 3 passenger cars (300 feet +/-).
- All new station platforms will be meet level boarding requirements.
- All existing low level station platforms are exempt from the level boarding requirement based on agreements with the host freight railroads and will be retained.
- New stations will be constructed with 50 parking spaces. Existing stations without parking will have 50 parking spaces added.
- Existing station and highway signage meets current Amtrak requirements. New platform signage is required for all stations with reconstructed platforms.
- Whitehall Station will not be located as part of the proposed improvements.

Proposed Station Improvements

The proposed station improvements are based on the Amtrak station design standards shown in Figure 2. The proposed station design components and service features are based on the existing or projected annual ridership for each station.

Existing Stations

Table 4 summarizes the proposed improvements and associated order of magnitude costs for the existing stations in the project study area. The listed improvements are proposed to ensure all stations fully meet the Amtrak station design standards and ADA standards.

Figure 2 - Amtrak Station Classifications and Features

	Physical Design and Service Features	Classifications				
		I	II	III	IV	V
		Large	Medium	Small/ Medium	Small	
		Staffed	Staffed	Caretaker	Shelter/ Unstaffed	Platform/ Unstaffed
	Projected Ridership Thresholds:	Greater than 400,000	100,000 to 400,000	20,000 to 100,000	4,000 to 20,000	Less than 4,000
Facility Type	Platform	●	●	●	●	●
	Platform canopy	●	●	●	○	
	Sheltered waiting area providing windbreak/weather protection				●	
	Station building with restroom(s) and other amenities in conditioned structure	●	●	●		
Access and Wayfinding Elements	Auto pick-up / drop-off	●	●	●	○	○
	Parking	○	●	●	○	○
	Rental cars	●	○	○		
	Bus access	○	○	○	○	
	Other transit access (bus, light/commuter rail)	○	○	○	○	
	Taxi access	●	●	●	○	
	Bicycle racks	●	●	●	○	
	Station signage (Amtrak Standards)	●	●	●	●	●
	Highway signage	●	●	●	●	●
Customer Service Elements	**Ticketing and Baggage**					
	Quik-Trak/eTicketing	●	●	●	●	○
	Ticket office	●	●			
	Passenger boarding assistance	●	●			
	Checked baggage handling	●	○			
	Caretaker / greeter staff			●		
	Passenger Information					
	Passenger information display system (PIDS)	●	●	●	○	
	Pay telephones	●	●	○	○	
	Information counter	●	○			
	Customer service office	●				
	Security					
	Emergency platform call box	●	●	●	●	
	Security facilities on site	●				
	Security on call / systems		●	○		
	Local police surveillance / call box				○	○

● Generally required for classification
○ Optionally required for classification

Table 4 - Proposed Station Improvements

Station	Annual Ridership (FY 2010)	Station Class	Proposed Improvements	Cost Estimate
Rutland	15,843	IV	Emergency Platform Call Box	$20,000
Castleton	1,734	V	50 Parking Spaces Auto pick-up/drop off	$115,000
Fort Edward	8,386	IV	Emergency Platform Call Box 50 Parking Spaces Auto pick-up/drop off	$135,000
Saratoga Springs	29,678	III	Bicycle Racks Passenger Information Display System (PIDS) Emergency Platform Call Box	$82,000
Schenectady	55,458	III	Bicycle Racks Passenger Information Display System (PIDS) Emergency Platform Call Box	$82,000
Albany/ Rensselaer	722,096	I	The existing station generally meets the requirements for Classification I stations. There are no proposed improvements to this station.	$0

New Stations:

Manchester, North Bennington, and Mechanicville Stations are projected to serve less than 4,000 annual passengers qualifying them as Classification V – Small Unsheltered/Unstaffed Stations, based on Amtrak station classifications. Table 5 summarizes the proposed improvements and associated order of magnitude costs for the existing stations in the project study area. The following design and service features are proposed to fully meet the Amtrak station design standards and ADA standards for the new stations

Table 5 - Proposed New Stations

Station	Proposed Station Class	Proposed Improvements	Cost Estimate
Mechanicville	V	300-foot High Level Platform 50 Parking Spaces Auto pick-up/drop off	$820,000
North Bennington	V	300-foot High Level Platform 50 Parking Spaces Auto pick-up/drop off	$820,000
Manchester	V	300-foot High Level Platform 50 Parking Spaces Auto pick-up/drop off	$820,000

For Alternative 3 only, Manchester Station would be a terminal station, and as would be considered a Classification III Small/Medium Caretaker Station. Additionally a facility would be required to provide overnight layover areas, maintenance shops and facilities, and the necessary utilities to service the trains. Table 6 summarizes the proposed improvements to construct the necessary facilities for a terminal station in Manchester, Vermont.

Table 6 - Manchester Station Facilities (Alternative 3 Only)

Facility Type	Proposed Station Class	Proposed Improvements	Cost Estimate[1]
Terminal Station	III	300' High Level Platform Platform Canopy Station Building with Restrooms 50 Parking Spaces Auto pick-up/drop off Bicycle Racks Station/Highway Signage Quik-Trak/eTicketing Passenger Information Display System (PIDS) Emergency Platform Call Box	$1,182,000
Layover/ Maintenance	N/A	Train layover siding with maintenance vehicle access drives. Layover area sufficient to accommodate 1 train consisting of 5 passenger cars and 2 locomotives (~640 feet) Train layover area utility service (power, lighting, water, drainage, sewer) Maintenance building with shop, bathroom, and employee areas Employee parking area (10 spaces)	$1,450,400

1 Base material costs only. No contingencies included.

Table 7 includes a breakdown of the capital cost estimate for each facility.

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Table 7 - Facility Cost Breakdown

Facility	Site Preparation	High Level Platform		Platform Canopy		Station Building		Station Signage	Highway Signage	Parking/Pick-up/ Drop-off		Bicycle Rack		QuikTrak/ eTicketing	PIDS	Emergency Platform Call Box		Utility Service	Layover Area	Total
	LS	$1,700 Quant.	FT Cost	$500 Quant.	FT Cost	$200 Quant.	SF Cost	LS	LS	$2,300 Quant.	Space Cost	$2,000 Quant.	EA Cost	LS	LS	$20,000 Quant.	EA Cost	LS	LS	
Rutland Station (Upgrades)	$0	0	$0	0	$0	0	$0	$0	$0	0	$0	0	$0	$0	$0	1	$20,000	$0	$0	$20,000
Castleton Station (Upgrades)	$0	0	$0	0	$0	0	$0	$0	$0	50	$115,000	0	$0	$0	$0	0	$0	$0	$0	$115,000
Ft. Edward Station (Upgrades)	$0	0	$0	0	$0	0	$0	$0	$0	50	$115,000	0	$0	$0	$0	1	$20,000	$0	$0	$135,000
Saratoga Springs Station (Upgrades)	$0	0	$0	0	$0	0	$0	$0	$0	0	$0	1	$2,000	$0	$60,000	1	$20,000	$0	$0	$82,000
Schenectady Station (Upgrades)	$0	0	$0	0	$0	0	$0	$0	$0	0	$0	1	$2,000	$0	$60,000	1	$20,000	$0	$0	$82,000
Manchester Station (New)	$150,000	300	$510,000	0	$0	0	$0	$40,000	$5,000	50	$115,000	0	$0	$0	$0	0	$0	$0	$0	$820,000
North Bennington Station (New)	$150,000	300	$510,000	0	$0	0	$0	$40,000	$5,000	50	$115,000	0	$0	$0	$0	0	$0	$0	$0	$820,000
Mechanicville Station (New)	$150,000	300	$510,000	0	$0	0	$0	$40,000	$5,000	50	$115,000	0	$0	$0	$0	0	$0	$0	$0	$820,000
Manchester - Terminal Station (Alt. 3)	$150,000	300	$510,000	300	$150,000	500	$100,000	$40,000	$5,000	50	$115,000	1	$2,000	$30,000	$60,000	1	$20,000	$0	$0	$1,182,000
Manchester - Layover/ Maintenance (Alt. 3)	$100,000	0	$0	0	$0	1,500[1]	$225,000	0	$0	10	$23,000	0	$0	0	$0	0	$0	$1,000,000	$102,400	$1,450,500

1 Maintenance Facility - $150/SF

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1.3 Capital Cost Estimates by Alternative

Table 8 summarizes the capital cost estimates, by alternative, for both rail infrastructure and facility improvements assuming that the CP Colonie Subdivision (Segment 5) is used to get from Mechanicville to Albany/Rensselaer, New York. Table 9 provides capital cost estimates assuming that the route from Mechanicville, New York to Albany/Rensselaer, New York is by way of Schenectady, New York (Segments 1, 2 and 6). Both tables include a listing of all new or upgraded stations and all corridor segments that are affected by each alternative.

As shown in the tables Alternatives 2 and 6 are anticipated to require the largest capital expenditures, and Alternative 3 is anticipated to have the lowest capital cost requirement. Generally, those alternatives with greater route mileage are expected to have higher capital costs. Using the CP Colonie Subdivision (Segment 5) as the route between Mechanicville, New York and Albany/Rensselaer, New York is anticipated to be significantly more costly than the routing via Schenectady, New York (Segments 1, 2, and 6).

Table 8 - Cost Estimate by Alternative (CP Colonie Routing)

Alternative	Existing Stations to be Improved	New Stations	Corridor Segments	Rail Infrastructure Cost	Facility Cost	Equipment Cost[1]	Total Base Cost	Total Cost[2]
Alt. 1 – No-Build	No improvements	No new stations.	1,2,3,4	-	-	-	-	-
Alt. 2 – Loop Service	Rutland, Castleton, Fort Edward/Glens Falls, Saratoga Springs, Schenectady	Mechanicville, N. Bennington, and Manchester	1-5,7-10	$131,233,720	$2,894,000	$13,000,000	$147,127,720	$210,392,640
Alt. 3 – New Service to Manchester (Through Service)	None	Mechanicville, N. Bennington, and Manchester[2]	5,7,8,9	$88,647,920	$4,272,500	$1,500,000	$94,420,420	$135,021,201
Alt. 3 – New Service to Manchester (Connecting Service)	None	Mechanicville, N. Bennington, and Manchester[3]	5,7,8,9	$88,647,920	$4,272,500	$13,000,000	$105,920,420	$151,466,201
Alt. 4 – New Service to Rutland (Through Service)	Rutland	Mechanicville, N. Bennington, and Manchester	5,7,8,9,10	$109,493,720	$2,480,000	-	$111,973,720	$160,122,420
Alt. 4 – New Service to Rutland (Connecting Service)	Rutland	Mechanicville, N. Bennington, and Manchester	5,7,8,9,10	$109,493,720	$2,480,000	$13,000,000	$124,973,720	$178,712,420
Alt. 5 – Rerouted Ethan Allen Service	Rutland	Mechanicville, N. Bennington, and Manchester	5,7,8,9,10	$109,493,720	$2,480,000	-	$111,973,720	$160,122,420
Alt. 6 – Split Shuttle Service	Rutland, Castleton, Fort Edward/Glens Falls, Saratoga Springs, Schenectady	Mechanicville, N. Bennington, and Manchester	1-5,7-10	$131,233,720	$2,894,000	$13,000,000	$147,127,720	$210,392,640

1 Assumes consist includes: one cabbage unit, one diesel locomotive and two single-level coaches

2 Assumes 30% contingency for overall construction (including incidentals) and 13% for professional services (survey, engineering, construction management and project administration).

3 Assumes construction of a caretaker-type station and layover/maintenance facility at the Manchester terminus.

Table 9 - Cost Estimate by Alternative (Schenectady Routing)

Alternative	Existing Stations to be Improved	New Stations	Corridor Segments	Rail Infrastructure Cost	Facility Cost	Equipment Cost[1]	Total Base Cost	Total Cost[2]
Alt. 1 – No-Build	No improvements	No new stations.	1,2,3,4	-	-	-	-	-
Alt. 2 – Loop Service	Rutland, Castleton, Fort Edward/Glens Falls, Saratoga Springs, Schenectady	Mechanicville, N. Bennington, and Manchester	1-4,6-10	$92,257,400	$2,894,000	$13,000,000	$108,151,400	$154,656,502
Alt. 3 – New Service to Manchester (Through Service)	Schenectady	Mechanicville, N. Bennington, and Manchester[2]	1,2,6,7,8,9	$56,886,600	$4,354,500	$1,500,000	$62,741,100	$89,719,773
Alt. 3 – New Service to Manchester (Connecting Service)	Schenectady	Mechanicville, N. Bennington, and Manchester[2]	1,2,6,7,8,9	$56,886,600	$4,354,500	$13,000,000	$74,241,100	$106,164,773
Alt. 4 – New Service to Rutland (Through Service)	Rutland, Schenectady	Mechanicville, N. Bennington, and Manchester	1,2,6-10	$77,732,400	$2,562,000	-	$80,294,400	$114,820,992
Alt. 4 – New Service to Rutland (Connecting Service)	Rutland, Schenectady	Mechanicville, N. Bennington, and Manchester	1,2,6-10	$77,732,400	$2,562,000	$13,000,000	$93,294,400	$133,410,992
Alt. 5 – Rerouted Ethan Allen Service	Rutland, Schenectady	Mechanicville, N. Bennington, and Manchester	1,2,6-10	$77,732,400	$2,562,000	-	$80,294,400	$114,820,992
Alt. 6 – Split Shuttle Service	Rutland, Castleton, Fort Edward/Glens Falls, Saratoga Springs, Schenectady	Mechanicville, N. Bennington, and Manchester	1-4,6-10	$92,257,400	$2,894,000	$13,000,000	$108,151,400	$154,656,502

1 Assumes consist includes: one cabbage unit, one diesel locomotive and two single-level coaches.

2 Assumes 30% contingency for overall construction (including incidentals) and 13% for professional services (survey, engineering, construction management and project administration).

3 Assumes construction of a caretaker-type station and layover/maintenance facility at the Manchester terminus.

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A-2

Attachment 2 - Operations

2 Operations

Operating and maintenance costs are typically comprised of four major components:

- Transportation – The costs associated with the personnel directly involved in the movement of trains and the cost to move (operate) the trains. This cost includes the salaries of locomotive engineers and conductors, train dispatchers, and other operating personnel. Also included are the cost of Onboard Service personnel and the associated costs of providing food service, where applicable. These costs include provision for "Extra Board" staff to cover regular assignments due to vacations, training, illness, etc. and benefits accruing to the staff. Finally, this category includes provision for alternative transportation during times of heavy infrastructure maintenance or emergencies.
- Mechanical – The costs to maintain the equipment. This cost includes the daily cleaning and maintenance of the equipment and all major overhaul and repair work. Similar, to transportation needs, a reserve of equipment or "spare margin" is also included to provide equipment during times of routine maintenance, mechanical failures, wreck damage, etc.
- Engineering – The right-of-way and track maintenance costs. It includes labor and material costs for items such as tie renewal, ballast cleaning, rail replacement, grade crossing maintenance, etc.
- Administrative – The costs to administer the service and provide critical support services such as reservations systems, training and marketing programs.

In addition to these four categories, each service alternative considered will require the payment of an access fee to the host railroad(s). The access fee may be included in the engineering cost category. For the purposes of this analysis, it is assumed that the access fee charged by each host railroad is consistent among the host railroads in what it includes and the rate charged. A separate access fee will be assumed for each host railroad (i.e. if an alternative operates over three different railroads, three separate access fees will be assumed). Along with the

host railroad access fee Amtrak also provides performance incentive payments to host railroads based on specific criteria pertaining to on-time performance measurements.

It should be noted that Amtrak, the operator of the Adirondack and Ethan Allen services, has a more detailed cost model with additional breakdowns of the four major categories listed above. This initial screening of service alternatives will consider the four major categories of costs described above.

Existing Conditions

The existing Adirondack and Ethan Allen services are funded by NYSDOT and VTrans respectively and are operated by Amtrak. The No-Build and four of the five service alternatives assume that these two existing services continue to operate as they are structured today. Alternative 5 would reroute the Ethan Allen service via Mechanicville, North Bennington and Manchester to Rutland. The existing Adirondack service is structured to serve the New York City – Albany – Montreal corridor while the Ethan Allen service is structured to serve the New York City – Albany – Rutland corridor. The Ethan Allen generally operates with a locomotive and five coaches (four 78-seat coaches and one café car with 53 seats). It traverses three host railroads north of Albany – CSX, CP, and VRS. The total operating territory along the three host railroads is 100 miles (200 miles roundtrip). Since the existing Ethan Allen service structure is closest to the service alternatives being considered, it will serve as the basis of comparison for the service alternatives.

Alternative 1 – No-Build

The No-Build Alternative assumes that the existing Adirondack and Ethan Allen Services continue to operate with their existing O&M cost structure and equipment consists. There are assumed to be no changes in the annual operating costs of the services (other than inflation).

Alternative 2 – Loop Service

Alternative 2 proposes the operation of a new connecting loop service from Albany/Rensselaer to Rutland and back around to Albany/Rensselaer, serving all existing Ethan Allen stations plus three new stations in Manchester, North Bennington and Mechanicville.

Compared to the Existing Condition, Alternative 2 requires the following:

- One new set of equipment (1 locomotive, two coaches, 1 cabbage unit, and a spare equipment allowance;
- One additional crew (1 Engineer, 1 Conductor, 1 Assistant Conductor) and an

Extra Board allowance;

- 217/195 (Schenectady/CP Colonie routing) additional train miles;
- Service at three new stations (Manchester, North Bennington, and Mechanicville); and
- One additional host railroad (PAR).

Alternative 3 – New Service to Manchester

Alternative 3 proposes the operation of a new service from Albany/Rensselaer to Manchester and back. Since Manchester does not currently have a facility to "turn" the train to orient the traditional "locomotive first" operation, a cab car or non-powered locomotive is necessary to provide push-pull service.

Compared to the Existing Condition, Alternative 3 (Connecting Service) requires the following:

- One new set of equipment (1 locomotive, two coaches, 1 cabbage unit, and a spare equipment allowance;
- One additional crew (1 Engineer, 1 Conductor, 1 Assistant Conductor) and an Extra Board allowance;
- A new layover facility in Manchester;
- Mechanical staff at Manchester to service trains at the new layover facility;
- 170/129 (Schenectady/CP Colonie routing) additional train miles;
- Service at three new stations (Manchester, North Bennington, Mechanicville); and
- One additional host railroad (PAR).

During the public review of the service alternatives, it was suggested that a through service would be preferred over a connecting service at Albany. Amtrak's experience in the intercity market indicates a shuttle connection reduces total demand from 25 to 40 percent, depending upon the type of service. To operate a through service, an existing Empire Corridor train that currently terminates in Albany would be extended to Manchester. In order to extend this train, an additional crew would be required.

Compared to the Existing Condition, Alternative 3 (Through Service) requires the following:

- Since Manchester does not currently have a facility to "turn" the train to orient the traditional "locomotive first" operation, a cab car or non-powered locomotive is necessary to provide push-pull service; a cabbage unit is assumed for this analysis. Also, it may be necessary to increase the spare

equipment allowance;

- One additional crew (1 Engineer, 1 Conductor, 2 Assistant Conductors, 1 Lead Service Attendant) and an Extra Board allowance;
- 170/129 (Schenectady/CP Colonie routing) additional train miles;
- Service at three new stations (Manchester, North Bennington, and Mechanicville); and
- One additional host railroad (PAR).

Alternative 4 –New Service to Rutland

Alternative 4 proposes the operation of a new service from Albany/Rensselaer to Rutland and back, serving the existing Schenectady and Rutland stations plus three new stations in Manchester, North Bennington and Mechanicville.

Compared to the Existing Condition, Alternative 4 (Connecting Service) requires the following:

- One new set of equipment (1 locomotive, two coaches, 1 cabbage unit, and a spare equipment allowance;
- One additional crew (1 Engineer, 1 Conductor, 1 Assistant Conductor) and an Extra Board allowance;
- 234/191 (Schenectady/CP Colonie routing) additional train miles;
- Service at three new stations (Manchester, North Bennington, and Mechanicville); and
- One additional host railroad (PAR).

During the public review of the service alternatives, it was suggested that a through service would be preferred over a connecting service at Albany. Amtrak's experience in the intercity market indicates a shuttle connection reduces total demand from 25 – 40%, depending upon the type of service. To operate a through service, an existing Empire Corridor train that currently terminates in Albany would be extended to Rutland. In order to extend this train, an additional crew would be required. No additional equipment would be required.

Compared to the Existing Condition, Alternative 4 (through Service) requires the following:

- No additional equipment is required to operate the service as an existing Empire Corridor set is being utilized. It may be necessary to increase the spare equipment allowance;
- One additional crew (1 Engineer, 1 Conductor, 2 Assistant Conductors, 1 Lead

Service Attendant) and an Extra Board allowance;

- 234/191 (Schenectady/CP Colonie routing) additional train miles;
- Service at three new stations (Manchester, North Bennington, and Mechanicville); and
- One additional host railroad (PAR).

Alternative 5 – Rerouted Ethan Allen Service

Alternative 5 would reroute the existing Ethan Allen service. The rerouted service would travel via Mechanicville to Rutland and back. It would service two existing stations in Schenectady and Rutland plus three new stations in Manchester, North Bennington and Mechanicville. The service is assumed to be provided by the existing five coach consist (four standard coaches and one café car seats) hauled by a diesel locomotive. This service will operate over four host railroads (CSX, CP, VRS (VTR) and PAR) north of Albany for a total of 234 miles.

Compared to the Existing Condition, Alternative 5 requires the following:

- No new equipment (existing Ethan Allen equipment used);
- No additional crew (existing Ethan Allen crew used);
- 34/(-9) (Schenectady/CP Colonie routing) additional train miles;
- Service at three new stations (Manchester, North Bennington, and Mechanicville); and
- One additional host railroad (PAR).

Alternative 6 – Split Shuttle Service

Alternative 6 proposes the operation of a new "split" shuttle service from Albany/Rensselaer to Rutland and back via two routes. One route would follow the existing Ethan Allen service corridor while the second route would be via Mechanicville, North Bennington and Manchester to Rutland. The split shuttle would service all existing Ethan Allen stations plus three new stations in Manchester, North Bennington and Mechanicville. Since Albany does not currently have a facility to "turn" the train to orient the traditional "locomotive first" operation, a cab car or non-powered locomotive is necessary to provide push-pull service.

Compared to the Existing Condition, Alternative 6 requires the following:

- Two new sets of equipment (1 locomotive, two coaches, and 1 cabbage unit in each set) and spare equipment allowances;
- Two additional crews (1 Engineer, 1 Conductor, 1 Assistant Conductor in each crew) and an Extra Board allowance;

- 434/391 (Schenectady/CP Colonie routing) additional train miles;
- Service at three new stations (Manchester, North Bennington, and Mechanicville); and
- One additional host railroad (PAR).

Assessment of O&M Costs

A summary of operating assumptions is documented in Table 1. For the purposes of the Phase One Screening, order of magnitude O&M costs for each alternative were calculated based on the existing operating cost for the Ethan Allen service. The fully-allocated cost for operating the Ethan Allen service during Fiscal Year 2010-11 was used to estimate an average per-mile operating cost. This per-mile cost was then applied to the proposed service alternatives to calculate estimated O&M costs for each, based on the additional train miles for each alternative. Tables 2 and 3 show the estimated O&M cost for both routings to connect Mechanicville, New York to Albany/Rensselaer, New York and the relative cost impact, by alternative.

Major points to be noted about the O&M cost estimates:

- Of the Build Alternatives, Alternative 6 has the highest additional O&M costs:
  - Two new crews are required;
  - It has the highest new train mileage; and
  - While Alternative 6 requires two sets of equipment (two two-car sets), the equipment requirements are similar to existing conditions (one five car set).
- Of the Build Alternatives, Alternative 5 has the lowest additional O&M costs since rerouting the existing Ethan Allen service results in an increment of 34/(-9) (Schenectady/CP Colonie routing) train miles.
- For Alternative 3, the operating cost would be slightly higher than the amount indicated in Table 2 and 3 as a mechanical crew would be needed to staff the Manchester Layover facility.
- For Alternatives 3 and 4:
  - The difference in operating cost of through versus connecting service is anticipated to be minimal; and
  - The capital equipment cost is higher for the connecting service considering the requirement for one new set – one locomotive and two coaches - to operate the proposed service.

Table 1 - Operations Summary

Service Parameters	Alternative 1 – No-Build (Ethan Allen stats)	Alternative 2 – Loop Service	Alternative 3 – Service to Manchester		Alternative 4 – Service to Rutland		Alternative 5 – Rerouted Ethan Allen Service	Alternative 6 – Split Shuttle Service
Service	Through	Connecting	Through	Connecting	Through	Connecting	Through	Connecting
New Consists	-	1	-	1	-	1	-	2
Locomotives	-	1	-	1	-	1	-	2
Coaches	-	2	-	2	-	2	-	4
Host Railroads	-	4	4	4	4	4	1	4
New Op Crews	-	1	1	1	1	1	-	2
New Mechanical Crews	-	-	1	1	-	-	-	-
New Stations	-	3	3	3	3	3	3	3
O&M Cost Impact	None	Moderate	oderate	Moderate	Moderate	Moderate	Low	High
Notes	Maintains existing Ethan Allen (EA) and Adirondack (ADK) service.						Reroutes existing EA service	Maintains existing EA and ADK service

Table 2 - Estimated Net Change in O&M Cost (CP Colonie Routing)

Alternative	1	2	3	4	5	6
From	Rutland	Rutland	Manchester	Rutland	Rutland	Rutland
To	Albany	Rutland	Albany	Albany	Albany	Albany
No. of Daily Roundtrips	0	1	1	1	1	2
Daily Roundtrip Miles	0	195	129	191	-9	391
Days of Operation	0	365	365	365	365	365
Annual Miles	0	71,175	47,085	69,715	(3,285)	142,715
Fully Allocated Unit Operating Cost	$ 66.01	$ 66.01	$ 66.01	$ 66.01	$ 66.01	$ 66.01
Annual Operating Cost	$ 0	$4,698,220	$3,108,053	$4,601,847	$(216,841)	$9,420,534

Table 3 - Estimated Net Change in O&M Cost (Schenectady Routing)

Alternative	1	2	3	4	5	6
From	Rutland	Rutland	Manchester	Rutland	Rutland	Rutland
To	Albany	Rutland	Albany	Albany	Albany	Albany
No. of Daily Roundtrips	0	1	1	1	1	2
Daily Roundtrip Miles	0	217	170	234	34	434
Days of Operation	0	365	365	365	365	365
Annual Miles	0	79,205	62,050	85,410	12,410	158,410
Fully Allocated Unit Operating Cost	$ 66.01	$ 66.01	$ 66.01	$ 66.01	$ 66.01	$ 66.01
Annual Operating Cost	$ 0	$ 5,228,276	$ 4,095,884	$ 5,637,864	$ 819,177	$ 10,456,552

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Attachment 3 – Environmental Impact Summary Table

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3 Environmental Impact Summary Table

Table 1 - Summary of Anticipated Environmental Impacts

	Noise and Vibration Impacts	Rare, Threatened and Endangered (RTE) Species/Habitats	Water Resources	Floodplain and Wetland Impacts	Environmental Justice	Socioeconomic Impacts and Land Use	Cultural/Historic Section 4(f) and Recreational Section 4(f) and 6(f) Impacts
Segment 1	Noise: Future noise levels may increase up to 3dba. Potential moderate noise impacts near at-grade crossing up to 139 ft from near track. For new special trackwork – potential moderate noise impacts up 200'/300' (jointed rail/ continuous welded rail (CWR)) and potential severe impacts 46'/200'. Vibration: Distance from near track to potential vibration impact: Special Trackwork – 200'/183' (land use category 2/3).	Potential impacts to RTE species or habitat is expected to be minimal.	The potential for impacts to surface water or groundwater resources along Segment 1 is expected to be minimal.	Floodplains: Floodplains crossed by or adjacent to Segments 1 through 4 are unlikely to be impacted by the Project unless work extends outside of the existing rail ROW or surface water crossings are modified in such as way as to change the hydraulic opening. Wetlands: Wetlands extending into or adjacent to Segments 1 through 4 are unlikely to be impacted by the Project unless work extends outside of the existing rail ROW or surface water crossings are modified in such as way as to change the hydraulic opening.	Seven census tracts along Segment 1 qualify as EJ populations. No properties would be acquired in this segment, so EJ communities would not be displaced nor would community cohesion be affected.	Socioeconomic Impacts: No significant and adverse direct, indirect, or cumulative effects to socioeconomic conditions are expected to result from the Project. Constructing a new wye in Mechanicville and reconstructing a wye in Albany on Segment 5 may lead to direct changes to land use, and direct, though likely not significant, effects associated with land acquisition and community cohesion. It is anticipated that the scale or types of properties acquired or businesses potentially relocated would not amount to a significant impact to socioeconomic conditions. Given the likely availability of potentially suitable land that may be developed adjacent to the ROW for the proposed new station parking areas, it is unlikely that parking lots would replace residences or businesses. Direct effects to socioeconomic conditions as a result of land use changes related to new stations are considered unlikely. On a regional level, the Project would be expected to support regional planning initiatives, particularly the clearly defined goals outlined by the Rutland Regional Planning Commission with regard to enhancement of rail service throughout the region as a means of supporting economic development. Only along Segment 5, with the proposed new wye in Mechanicville and grade separated crossing at the reconstructed wye in Albany, have project-related activities extending beyond the existing ROW been identified. Since Segment 5 is common to all Service Alternatives, there is no difference between the alternatives in the potential for impacts to land use from infrastructure improvements. There is potential for direct land use impacts associated with the development of parking lots to support the three proposed new stations in Mechanicville, NY North Bennington, VT and Manchester, VT. Each of these stations is also common to all Service Alternatives, and therefore there is no difference between the alternatives in the potential for impacts to land use from the stations.	Cultural: 2 above-ground resources within 100' (50' from centerline) of the rail corridor. No anticipated adverse effects. Recreational: 5 properties identified; no direct or constructive use impacts anticipated.
Segment 2	Noise: Future noise levels may increase up to 3dba. Potential moderate noise impacts near at-grade crossing up to 191 ft from near track. For new special trackwork – potential moderate noise impacts up 200'/300' (jointed rail/CWR) and potential severe impacts 55'/200'. Vibration: Distance from near track to potential vibration impact: Special Trackwork – 157'/110' (land use category 2/3).	Potential impacts to RTE species or habitat is expected to be minimal.	The potential for impacts to groundwater resources along Segment 2 is expected to be minimal. Upgrading crossings to accommodate a new siding may impact surface water resources.		Two census tracts along Segment 2 qualify as EJ populations. No properties would be acquired in this segment, so EJ communities would not be displaced nor would community cohesion be affected.		Cultural: 1 above-ground resource within 100' of the rail corridor. No anticipated adverse effects. Recreational: No properties identified adjacent to rail line in Segment 2.
Segment 3	Noise: Future noise levels may increase up to 2dba. Potential moderate noise impacts near at-grade crossing up to 138 ft from near track and potential severe impacts up to 29'. For new special trackwork – potential moderate noise impacts up 88'/200' (jointed rail/CWR) and potential severe impacts up to 50' for CWR. Vibration: Distance from near track to potential vibration impact: Special Trackwork – 172'/120' (land use category 2/3).	Potential impacts to RTE species or habitat is expected to be minimal.	The potential for impacts to groundwater resources along Segment 3 is expected to be minimal. Upgrading crossings to accommodate a new siding and mainline track may impact surface water resources.		No EJ communities adjacent to Segment 3.		Cultural: 2 above-ground resources within 100' of the rail corridor. No anticipated adverse effects. High archaeological sensitivity between Fort Edward and Whitehall, where Champlain Canal and early barge canal parallel rail corridor. Recreational: 5 properties identified; no direct or constructive use impacts anticipated.
Segment 4	Noise: Future noise levels may increase up to 2dba. Potential moderate noise impacts near at-grade crossing up to 443 ft from near track and potential severe impacts up to 37'. For new special trackwork – potential moderate to severe noise impacts up 148'/39' (jointed rail/CWR). Vibration: Distance from near track to potential vibration impact: Mainline – 94'/66' (land use category 2/3) Special Trackwork – 200'/183'	RTE species or habitat in Segment 4 may be impacted because the element occurrences (Eos) are close to the rail ROW.	The potential for impacts to surface water or groundwater resources along Segment 4 is expected to be minimal.		No EJ communities adjacent to Segment 4.		Cultural: 3 above-ground resources within 100' of the rail corridor. No anticipated adverse effects. Recreational: 3 properties identified; no direct or constructive use impacts anticipated.

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	Noise and Vibration Impacts	Rare, Threatened and Endangered (RTE) Species/Habitats	Water Resources	Floodplain and Wetland Impacts	Environmental Justice	Socioeconomic Impacts and Land Use	Cultural/Historic Section 4(f) and Recreational Section 4(f) and 6(f) Impacts
Segment 5	Noise: Future noise levels may increase up to 5dba. Potential moderate noise impacts along mainline up to 188'/549' (jointed rail/CWR) along mainline, and potential severe noise impacts 23'/58'. Potential moderate noise impacts near at-grade crossing up to 313 ft from near track and potential severe impacts up to 49'. For new special trackwork – potential moderate noise impacts up 300'/549' and potential severe impacts 177'/200'. Potential for moderate noise impacts up to 750' and severe noise impacts up to 350' from the new wye connection in Mechanicville. No noise impacts are expected near the proposed wye connection in Albany. Vibration: Distance from near track to potential vibration impact: Mainline – 86'/60' (land use category 2/3) Special Trackwork – 172'/120'	Potential impacts to RTE species or habitat is expected to be minimal.	The potential for impacts to groundwater resources along Segment 5 is expected to be minimal. A new bridge over the Anthony Kill would be built for the new wye connection in Mechanicville, and may impact the Anthony Kill. Upgrades to existing crossings and new crossing construction may impact surface water resources.	Floodplains: The proposed new crossing over the Anthony Kill and its floodplain may impact these resources. Other floodplains crossed by or adjacent to Segment 5 are unlikely to be impacted by the Project unless work extends outside of the existing rail ROW. Wetlands: The planned crossing over the Anthony Kill may impact wetlands. Other wetlands extending into or adjacent to Segment 5 are unlikely to be impacted by the Project unless work extends outside of the existing rail ROW.	Three census tracts along Segment 5 qualify as EJ populations. It is anticipated that the scale or types of properties acquired or businesses relocated to accommodate the grade separated crossing in Albany would not amount to a significant impact to socioeconomic conditions; therefore, EJ communities in Segment 5 would likely not bear direct effects.		Cultural: 6 above-ground resources within 100' of the rail corridor. Reconstructed wye connection in Albany may be considered an adverse effect to the two nearby properties that may be eligible for listing. High archaeological sensitivity along entire route due to close proximity of Hudson River, Erie Canal, and Champlain Canal. Recreational: 2 properties identified; no direct or constructive use impacts anticipated.
Segment 6	Noise: Future noise levels may increase up to 2dba. Potential moderate noise impacts near at-grade crossing up to 139 ft from near track and potential severe impacts up to 30'. For new special trackwork – potential moderate noise impacts up 59'/200' (jointed rail/CWR) and potential severe impacts up to 35' for CWR. Vibration: Distance from near track to potential vibration impact: Mainline – 86'/60' (land use category 2/3) Special Trackwork – 172'/120'	Potential impacts to RTE species or habitat is expected to be minimal.	The potential for impacts to groundwater resources along Segment 6 is expected to be minimal. Upgrading crossings to accommodate a new siding may impact surface water resources.	Floodplains: Floodplains crossed by or adjacent to Segments 6 through 10 are unlikely to be impacted by the Project unless work extends outside of the existing rail ROW or surface water crossings are modified in such as way as to change the hydraulic opening. Wetlands: Wetlands extending into or adjacent to Segments 6- 10 are unlikely to be impacted by the Project unless work extends outside of the existing rail ROW or surface water crossings are modified in such as way as to change the hydraulic opening.	No EJ communities adjacent to Segment 6.		Cultural: No above-ground resources within 100' of the rail corridor. Potential sites near Anthony Kill, otherwise generally low archaeological sensitivity. Recreational: No properties identified adjacent to rail line in Segment 6.
Segment 7	Noise: Future noise levels may increase up to 2dba. Potential moderate noise impacts near at-grade crossing up to 139 ft from near track and potential severe impacts up to 29'. A new passenger rail station in Mechanicville would have the potential for moderate noise impacts up to 29' for CWR. For new special trackwork – potential moderate noise impacts up 110'/200' (jointed rail/CWR) and potential severe impacts up to 23'/61'. Vibration: Distance from near track to potential vibration impact: Special Trackwork – 157'/110' (land use category 2/3)	Potential impacts to RTE species or habitat is expected to be minimal.	The potential for impacts to groundwater resources along Segment 7 is expected to be minimal; upgrading the crossings to accommodate the track may impact surface water resources.		No EJ communities adjacent to Segment 7.		Cultural: 2 above-ground resources within 100' of the rail corridor. No anticipated adverse effects. Recreational: No properties identified adjacent to rail line in Segment 7.

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	Noise and Vibration Impacts	Rare, Threatened and Endangered (RTE) Species/Habitats	Water Resources	Floodplain and Wetland Impacts	Environmental Justice	Socioeconomic Impacts and Land Use	Cultural/Historic Section 4(f) and Recreational Section 4(f) and 6(f) Impacts
Segment 8	Noise: Future noise levels may increase up to 6dba. Potential moderate noise impacts along mainline up to 100'/147' (jointed rail/CWR) along mainline and potential severe noise impacts up to 26' for CWR. Potential moderate noise impacts near at-grade crossing up to 905' ft from near track and potential severe impacts up to 207'. A new passenger rail station in North Bennington would have the potential for moderate noise impacts up to 209'/257' and potential severe impacts up to 49'/64'. For new special trackwork – potential moderate noise impacts up to 200' for either jointed rail or CWR and potential severe impacts up to 49'/64'. Vibration: Distance from near track to potential vibration impact: Mainline – 86'/60' (land use category 2/3) New Station – 20'/29'	Potential impacts to RTE species or habitat is expected to be minimal.	The potential for impacts to groundwater resources along Segment 8 is expected to be minimal. Upgrading the crossings to accommodate the infrastructure improvements and reconstructing bridges may impact surface water resources.		No EJ communities adjacent to Segment 8.		Cultural: 2 above-ground resources within 100' of the rail corridor. No anticipated adverse effects. High archaeological sensitivity along most of corridor due to close proximity of the Walloomsac River and Bennington Battlefield. Recreational: No properties identified adjacent to rail line in Segment 8.
Segment 9	Noise: Same potential impacts as Segment 8. Vibration: Same potential impacts as Segment 8.	RTE species in Segment 9 may be impacted because the EOs are close to the rail ROW. Increased train traffic or track improvements could impact bear movement and result in habitat fragmentation; the impacts are expected to be minimal because this segment is an active rail corridor.	The potential for impacts to groundwater resources along Segment 9 is expected to be minimal. Upgrading the crossings to accommodate new infrastructure and reconstructing bridges may impact surface water resources.		No EJ communities adjacent to Segment 9.		Cultural: 4 above-ground resources within 100' of the rail corridor. No anticipated adverse effects. Recreational: 4 properties identified; no direct or constructive use impacts anticipated.
Segment 10	Noise: Same potential impacts as Segment 8, except there will be no new Station in this segment. Vibration: Same potential impacts as Segment 8, except with no new Station in this segment.	RTE species in Segment 10 may be impacted because the EOs are close to the rail ROW. Increased train traffic or track improvements could impact deer and bear movement and result in habitat fragmentation; the impacts are expected to be minimal because this segment is an active rail corridor.	The potential for impacts to groundwater resources along Segment 10 is expected to be minimal. Upgrading crossings to accommodate new track may impact surface water resources.		No EJ communities adjacent to Segment 10.		Cultural: 2 above-ground resources within 100' of the rail corridor. No anticipated adverse effects. High archaeological sensitivity along Otter Creek, with several known sites. Recreational: 11 properties identified; no direct or constructive use impacts anticipated.

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Attachment 4 – Evaluation Summary Tables

4 Evaluation Summary Tables

Tables 1 through 6 present a summary of the evaluation rankings for each alternative including a brief justification describing why each alternative received a particular ranking. Each alternative has been assigned a "Positive" (●), "Negative" (○) or "Neutral" (◘) impact for each criteria using the symbols indicated.

Table 1 - Alternative One (No-Build)

Category	Criterion	Score	Justification
Rail Access and Mobility	Would the proposed alternative improve regional mobility and rail access to key destinations within the project study area?	○	Currently unserved areas would remain unserved.
	Would the proposed alternative lead to travel time savings for potential passengers, as compared to existing travel modes (i.e. rail, car, bus)?	○	Travel times would likely increase with increases in traffic volumes and congestion.
	Would the proposed alternative provide a frequency of service and/or routing that would make it an attractive transportation option?	○	• Existing deficiencies in coverage would remain. • Based on Phase One analyses, the No-Build alternative exhibits the lowest anticipated increase in annual ridership.
Transportation Efficiencies	Does the proposed alternative provide viable and useful intermodal connections?	○	Currently unserved areas would remain unserved.
	Is the proposed alternative generally cost efficient in terms of order of magnitude costs?	●	No additional capital or O&M costs would be required.
	Does the proposed alternative maximize use of the existing infrastructure?	◘	Alternative assumes no capital improvements beyond those already committed.
	Does the proposed alternative minimize impacts on existing freight and passenger rail operations (post implementation)?	◘	No additional impacts (positive or negative) to existing freight services or passenger rail services.
	Can the supporting infrastructure be built with	◘	No capital improvements necessary to

	minimum impact on the operations of existing freight and passenger rail services during construction?		implement this alternative.
Economic/ Sustainable Development	Would the alternative support or promote opportunities for Smart Growth & Economic Development?	○	Due to the remaining deficiencies in coverage, economic opportunities in the region would likely continue to be limited.
Environmental Quality	Does the proposed alternative minimize potential environmental impacts?	◉	No significant environmental impacts are anticipated.
	Does the proposed alternative result in any potentially positive environmental impacts?	◉	No significant environmental impacts (including benefits) are anticipated.

Table 2 - Alternative Two (Loop Service)

Category	Criterion	Score	Justification
Rail Access and Mobility	Would the proposed alternative improve regional mobility and rail access to key destinations within the project study area?	◉	Alternative would provide improved access to rail; however mobility would be hindered by loop routing.
	Would the proposed alternative lead to travel time savings for potential passengers, as compared to existing travel modes (i.e. rail, car, bus)?	○	Loop routing would make the round trip inefficient and make travel time savings unlikely.
	Would the proposed alternative provide a frequency of service and/or routing that would make it an attractive transportation option?	○	• Given the wide coverage area, this alternative is projected to have good potential for ridership capture; however the loop routing would make some connections inefficient. •
Transportation Efficiencies	Does the proposed alternative provide viable and useful intermodal connections?	◉	Provides connections to cities and major attractions within the study area; however, the loop routing may make the service less attractive for providing useful connections.
	Is the proposed alternative generally cost efficient in terms of order of magnitude costs?	○	• Based on the Phase One cost estimates, this alternative is anticipated to be one of the most expensive to implement. • This alternative is anticipated to have moderate operating costs compared to other alternatives.
	Does the proposed alternative maximize use of the existing infrastructure?	●	• Alternative can be implemented using established, active rail lines. • New connections can be established on existing track (in Vermont) with the capacity to support passenger rail.
	Does the proposed alternative minimize impacts on existing freight and passenger rail operations (post implementation)?	○	Additional passenger service on the New York side of the study area could lead to capacity issues depending on projected future freight traffic.
	Can the supporting infrastructure be built with minimum impact on the operations of existing freight and passenger rail services during construction?	◉	Capital improvements to support the proposed service can be constructed with minimal impact to existing operations.

Category	Criterion	Score	Justification
Economic/ Sustainable Development	Would the alternative support or promote opportunities for Smart Growth & Economic Development?	○	Alternative provides improved rail connections throughout the study area; however, the loop routing may be unattractive to choice riders and would likely limit economic development opportunities.
Environmental Quality	Does the proposed alternative minimize potential environmental impacts?	◉	Desktop review revealed no significant environmental impacts (or benefits) that would differentiate one build alternative from the others.
	Does the proposed alternative result in any potentially positive environmental impacts?	◉	

Table 3 - Alternative Three (New Service to Manchester)

Category	Criterion	Score	Justification
Rail Access and Mobility	Would the proposed alternative improve regional mobility and rail access to key destinations within the project study area?	◐	• Improved rail access to Albany/ Rensselaer from southwest Vermont • Lacks connection b/w Rutland and Manchester.
	Would the proposed alternative lead to travel time savings for potential passengers, as compared to existing travel modes (i.e. rail, car, bus)?	◐	• Potential travel time savings due to new connections. • No time savings for trips to Rutland from other Vermont stations.
	Would the proposed alternative provide a frequency of service and/or routing that would make it an attractive transportation option?	◐	• More attractive for travelers to/from Vermont, but limited due to lack of connection from Rutland to Manchester. • Based on the Phase One analyses, this alternative is projected to produce the second lowest increase in annual ridership.
Transportation Efficiencies	Does the proposed alternative provide viable and useful intermodal connections?	◐	• Provides connections to cities and major attractions within the study area. • No direct connection b/w Manchester and Rutland.
	Is the proposed alternative generally cost efficient in terms of order of magnitude costs?	●	• Based on the Phase One cost estimates, this alternative is anticipated to be the least expensive to implement. • This alternative is anticipated to have moderate operating costs compared to other alternatives.
	Does the proposed alternative maximize use of the existing infrastructure?	●	• Alternative can be implemented using established, active rail lines. • New connections can be established on existing track (in Vermont) with the capacity to support passenger rail.
	Does the proposed alternative minimize impacts on existing freight and passenger rail operations (post implementation)?	●	Alternative proposes adding service on the Vermont side of the study area where there is capacity for additional service.
	Can the supporting infrastructure be built with minimum impact on the operations of existing freight and passenger rail services during construction?	◐	Capital improvements to support the proposed service can be constructed with minimal impact to existing operations.

Category	Criterion	Score	Justification
Economic/ Sustainable Development	Would the alternative support or promote opportunities for Smart Growth & Economic Development?	⊙	Alternative provides improved rail connections to southwest Vermont; however, the lack of a direct link between Manchester and Rutland will likely limit economic development opportunities.
Environmental Quality	Does the proposed alternative minimize potential environmental impacts?	⊙	Desktop review revealed no significant environmental impacts (or benefits) that would differentiate one build alternative from the others.
	Does the proposed alternative result in any potentially positive environmental impacts?	⊙	

Table 4 - Alternative Four (New Service to Rutland)

Category	Criterion	Score	Justification
Rail Access and Mobility	Would the proposed alternative improve regional mobility and rail access to key destinations within the project study area?	●	• Improved rail access to Albany/Rensselaer from southwest Vermont • Provides rail link b/w Manchester and Rutland.
	Would the proposed alternative lead to travel time savings for potential passengers, as compared to existing travel modes (i.e. rail, car, bus)?	●	Potential travel time savings due to new connections.
	Would the proposed alternative provide a frequency of service and/or routing that would make it an attractive transportation option?	●	• More attractive for travelers to/from Vermont. • Based on the Phase One analyses, this alternative is projected to produce the highest increase in annual ridership.
Transportation Efficiencies	Does the proposed alternative provide viable and useful intermodal connections?	●	Provides connections to cities and major attractions within the study area.
	Is the proposed alternative generally cost efficient in terms of order of magnitude costs?	◉	• Based on the Phase One capital cost estimates, this alternative is anticipated to require moderate capital investment to implement. • This alternative is anticipated to have moderate operating costs compared to other alternatives.
	Does the proposed alternative maximize use of the existing infrastructure?	●	• Alternative can be implemented using established, active rail lines. • New connections can be established on existing track (in Vermont) with the capacity to support passenger rail.
	Does the proposed alternative minimize impacts on existing freight and passenger rail operations (post implementation)?	●	Alternative proposes adding service on the Vermont side of the study area where there is capacity for additional service.
	Can the supporting infrastructure be built with minimum impact on the operations of existing freight and passenger rail services during construction?	◉	Capital improvements to support the proposed service can be constructed with minimal impact to existing operations.
Economic/ Sustainable Development	Would the alternative support or promote opportunities for Smart Growth & Economic Development?	●	Due to improved rail connections within the study area and to the region, this alternative has good potential to support economic development opportunities.

Category	Criterion	Score	Justification
Environmental Quality	Does the proposed alternative minimize potential environmental impacts?	⊙	Desktop review revealed no significant environmental impacts (or benefits) that would differentiate one build alternative from the others.
	Does the proposed alternative result in any potentially positive environmental impacts?	⊙	

Table 5 - Alternative Five (Rerouted Ethan Allen Service)

Category	Criterion	Score	Justification
Rail Access and Mobility	Would the proposed alternative improve regional mobility and rail access to key destinations within the project study area?	◐	• Improved rail access to Albany/Rensselaer and beyond from SW Vermont. • Removes one frequency of service from the New York side.
	Would the proposed alternative lead to travel time savings for potential passengers, as compared to existing travel modes (i.e. rail, car, bus)?	◐	• Potential travel time savings due to new connections. • May increase travel time for travelers to/from New York stops.
	Would the proposed alternative provide a frequency of service and/or routing that would make it an attractive transportation option?	◐	• More attractive for travelers to/from Vermont; less so for travelers to/from New York side. • Based on the Phase One analyses, this alternative is projected to produce the lowest increase in annual ridership for the build alternatives, likely due to removing service from the New York side of the study area.
Transportation Efficiencies	Does the proposed alternative provide viable and useful intermodal connections?	●	Provides connections to cities and major attractions within the study area.
	Is the proposed alternative generally cost efficient in terms of order of magnitude costs?	●	• Would not require any additional equipment – is anticipated to have the lowest operating cost as compared to the other alternatives. • Based on the Phase One capital cost estimates, this alternative is anticipated to require moderate capital investment to implement.
	Does the proposed alternative maximize use of the existing infrastructure?	●	• Alternative can be implemented using established, active rail lines. • New connections can be established on existing track (in Vermont) with the capacity to support passenger rail.
	Does the proposed alternative minimize impacts on existing freight and passenger rail operations (post implementation)?	●	Alternative proposes adding service on the Vermont side of the study area where there is capacity for additional service.
	Can the supporting infrastructure be built with minimum impact on the operations of existing freight and passenger rail services during construction?	◐	Capital improvements to support the proposed service can be constructed with minimal impact to existing operations.

Category	Criterion	Score	Justification
Economic/ Sustainable Development	Would the alternative support or promote opportunities for Smart Growth & Economic Development?	⊙	Alternative provides improved rail connections to southwest Vermont; however, removing service from the New York side of the study area could limit economic development opportunities.
Environmental Quality	Does the proposed alternative minimize potential environmental impacts?	⊙	Desktop review revealed no significant environmental impacts (or benefits) that would differentiate one build alternative from the others.
	Does the proposed alternative result in any potentially positive environmental impacts?	⊙	

Table 6 - Alternative Six (Split Shuttle Service)

Category	Criterion	Score	Justification
Rail Access and Mobility	Would the proposed alternative improve regional mobility and rail access to key destinations within the project study area?	●	Improved rail access throughout the study area.
	Would the proposed alternative lead to travel time savings for potential passengers, as compared to existing travel modes (i.e. rail, car, bus)?	●	Potential travel time savings due to new connections.
	Would the proposed alternative provide a frequency of service and/or routing that would make it an attractive transportation option?	●	• More attractive due to increased coverage and additional frequency on the New York side of study area. • Based on the Phase One analyses, this alternative is projected to produce the second highest increase in annual ridership.
Transportation Efficiencies	Does the proposed alternative provide viable and useful intermodal connections?	●	Provides connections to cities and major attractions within the study area.
	Is the proposed alternative generally cost efficient in terms of order of magnitude costs?	○	• This alternative is anticipated to have the highest operating costs, as compared to the other alternatives. • Based on the Phase One capital cost estimates, this alternative is anticipated to be one of the most expensive to implement.
	Does the proposed alternative maximize use of the existing infrastructure?	●	• Alternative can be implemented using established, active rail lines. • New connections can be established on existing track (in Vermont) with the capacity to support passenger rail.
	Does the proposed alternative minimize impacts on existing freight and passenger rail operations (post implementation)?	○	Additional passenger service (two frequencies) on the New York side of the study area could lead to capacity issues depending on projected future freight traffic.
	Can the supporting infrastructure be built with minimum impact on the operations of existing freight and passenger rail services during construction?	◉	Capital improvements to support the proposed service can be constructed with minimal impact to existing operations.

Category	Criterion	Score	Justification
Economic/ Sustainable Development	Would the alternative support or promote opportunities for Smart Growth & Economic Development?	●	Due to improved rail connections within the study area and to the region, this alternative has good potential to support economic development opportunities.
Environmental Quality	Does the proposed alternative minimize potential environmental impacts?	○	Desktop review revealed no significant environmental impacts (or benefits) that would differentiate one build alternative from the others.
	Does the proposed alternative result in any potentially positive environmental impacts?	○	

B

Identification and Evaluation of Alternatives – Phase Two

Introduction

The purpose of the Phase Two screening process is to identify the Preferred Alternative for the project. During the Phase One screening the initial set of proposed alternatives was narrowed down to two Build Alternatives plus the No-Build Alternative based on criteria developed in accordance with the goals from the Project Purpose and Need Statement.

For the Phase Two evaluation, the Build Alternatives that advanced from the Phase One screening have been defined to a greater level of detail. The following analyses have been developed for the No-Build Alternative and the two Build Alternatives that advanced past the Phase One screen:

- Capital costs;
- Operations and maintenance costs;
- Ridership estimates;
- Operational Analysis/Operating Plans; and
- Review of environmental impacts.

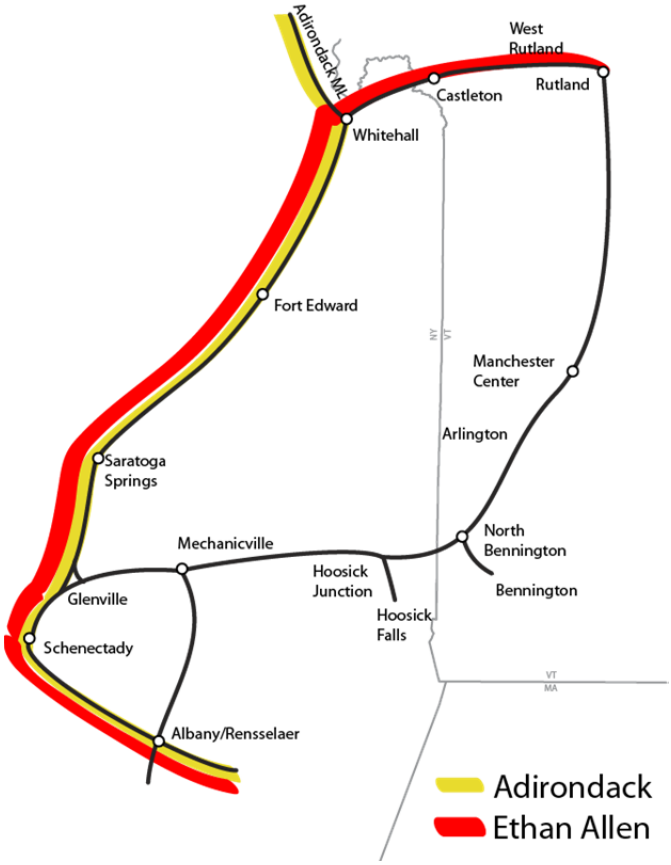
Based on the compiled data and analyses, a detailed assessment of each alternative was performed as part of the Phase Two screening. The alternatives were evaluated against each of the criteria described below and are scored on a scale of +2 (alternative is expected to have a significantly favorable impact), to -2 (alternative is expected to have a significantly unfavorable impact) in each category. A brief description of why the alternatives scored as they did is included. The scores for each of the 25 criteria are then summarized to produce a composite score for each goal and a best fit alternative is identified for each goal.

Description of Alternatives

The No-Build Alternative and the Build Alternatives that advanced from the Phase One Screening are described below.

No-Build Alternative

Figure 1: No-Build Alternative



The No-Build Alternative consists of the existing transportation systems plus currently planned and programmed track and service improvements in the project study area through the long-range planning horizon (year 2030). The National Environmental Policy Act (NEPA) requires inclusion in the evaluation of alternatives of a No-Build Alternative. It is evaluated to identify the operational and environmental effects on the study area if no action is taken. To meet this NEPA requirement, the No-Build Alternative was advanced to this second phase of the screening process so it can be compared to the final Build Alternatives. Figure 1 provides a schematic drawing of the No-Build Alternative.

Existing passenger rail services in the study area included in the No-Build Alternative include:

- The **Ethan Allen** service provides connections between Rutland, Vermont and New York City. It makes one round trip daily. Station stops within the project study area include Rutland, and Castleton, Vermont, and Fort Edward/Glens Falls, Saratoga Springs, Schenectady and Albany/Rensselaer, New York.
- The **Adirondack** service provides connections between Montreal and New York City. It makes one round trip daily. Station stops within the project study area include Whitehall, Fort Edward/Glens Falls,

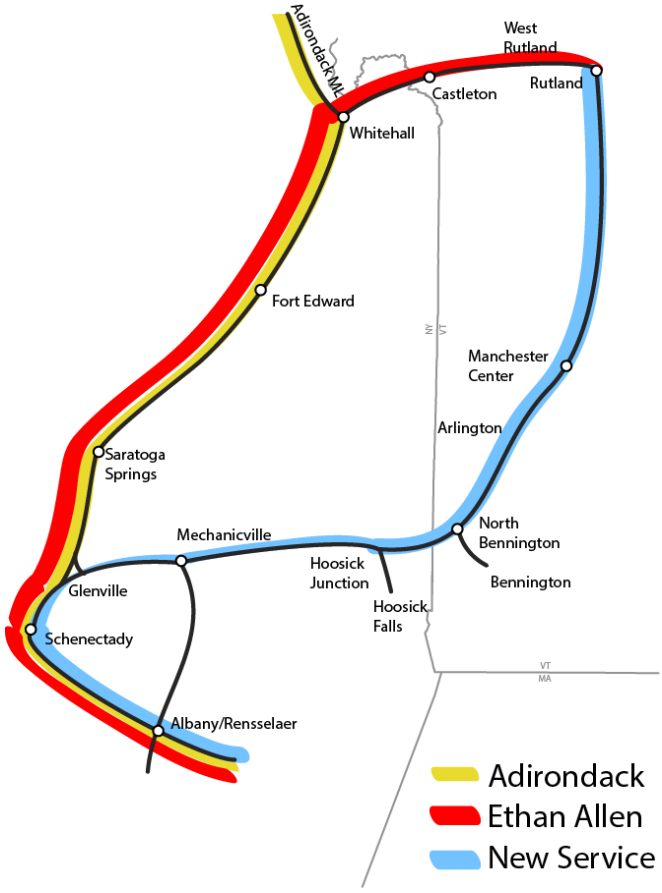
Saratoga Springs, Schenectady and Albany/Rensselaer, New York.

The No-Build Alternative includes programmed and funded improvements to the existing rail infrastructure in the study area. These improvements are:

- Addition of a fourth track at Albany/Rensselaer station ($58.1M)
- Addition of a second mainline track between Albany/Rensselaer and Schenectady ($91.2M)
- Two miles of new track at Ballston Spa to provide a five (5) mile segment of double-track extending from Saratoga Springs to Ballston Spa, New York ($6.6M).

Alternative 1[1]: New Service to Rutland

Figure 2: Alternative 1, New Service to Rutland



Alternative 1 would extend service to southwest Vermont, with a terminus in Rutland, Vermont. Figure 2 is a schematic map of the New Service to Rutland Alternative.

This alternative would operate out of Albany/Rensselaer, New York station connecting to new stations in Mechanicville, New York and North Bennington and Manchester, Vermont, en route to a terminus in Rutland, Vermont. Alternative 1 would operate one round trip per day.

Alternative 1 proposes a through service, with no transfer needed for service beyond Albany/Rensselaer, New York, along the Empire Corridor. To operate Alternative 1 as a through service, it is proposed that an existing Empire Corridor train that currently terminates at Albany/ Rensselaer, New York be extended to

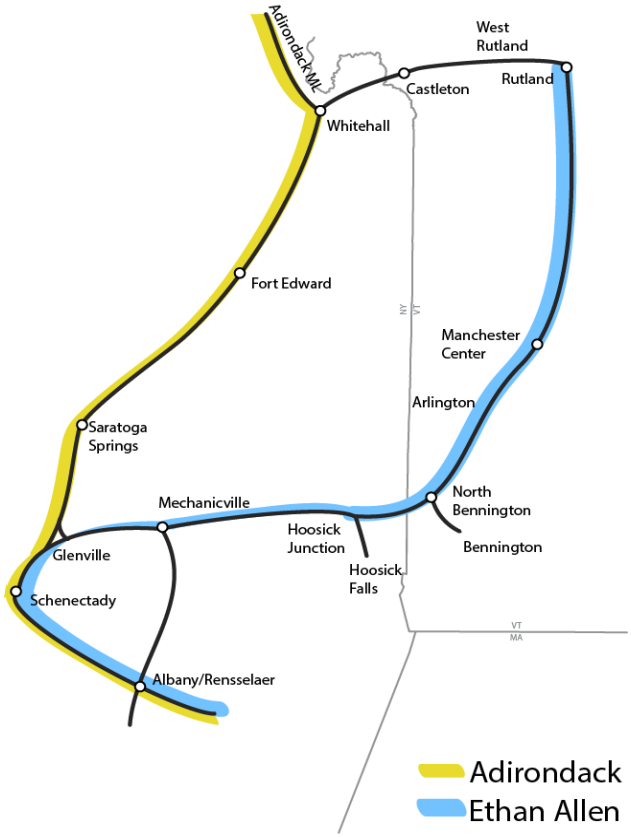
[1] Former Alternative 4 – from the Phase One Screening.

Rutland, Vermont.

In Alternative 1 the Ethan Allen and Adirondack services would continue to operate on the same routes and frequencies (one round trip per day for both) as they do now. Alternative 1 would provide new service to Mechanicville, New York and North Bennington and Manchester, Vermont.

Alternative 2[2]: Rerouted Ethan Allen Service

Figure 3: Alternative 2 - Reroute Ethan Allen



Alternative 2 proposes re-routing the existing Ethan Allen service through southwest Vermont. The alternative would operate between Rutland, Vermont and Albany/Rensselaer, New York through southwest Vermont with stops in Mechanicville, New York and North Bennington and Manchester, Vermont. Figure 3 is a schematic map of the Rerouted Ethan Allen Service Alternative.

Alternative 2 also proposes a through service, to New York City. Similar to existing Ethan Allen Service, no transfer would be needed for service beyond Albany/Rensselaer, NY along the Empire Corridor.

As part of Alternative 2, the existing Adirondack service would continue to operate on the same route and at the same frequency (one round trip per day) as it does now. The rerouted Ethan Allen service would operate one round trip per day.

With this alternative, service to Castleton would be eliminated while service to Mechanicville, New York and North Bennington and Manchester, Vermont would be added. This alternative would reduce service to one train per day in each direction (Adirondack service only) at Saratoga Springs and Fort Edward.

[2] Former Alternative 5 – from the Phase One Screening.

This section includes a discussion of how the No-Build and two Build Alternatives perform with respect to each of the criterion identified in the evaluation methodology. The alternatives are compared with respect to each criterion, and a summary evaluation table is provided at the end of the section.

GOAL 1: Extend Intercity Passenger Rail Access and Improve Mobility

Directness/Travel Time to Key Regional Destinations

This criterion focuses on the directness of the trip to key regional destinations within the project study area. The measures of effectiveness (MOE) used to evaluate this criterion are:

- The number of stations that would have train service;
- Transfers required; and
- Cumulative Travel Time

Directness to Key Regional Destinations

A need identified in the project Purpose and Need is to provide better access to trains service in the study area – particularly in southwestern Vermont. Providing rail access to more towns within the study area will open up better access to regional attractors near the stations. For existing stations within the study area, regional destinations have, in many cases, developed around the stations. The proposed new stations have been placed in locations that are proximate to the highest numbers of regional attractions – in the respective town centers – are along viable (existing) track, and are currently unserved. Table B1 indicates the stations (both existing and proposed) that will be served under each alternative.

Table B1 – Stations with Train Service

Station	No Build	Alternative 1	Alternative2
Rutland	●	●	●
Manchester		●	●
North Bennington		●	●
Mechanicville		●	●
Albany/Rensselaer	●	●	●
Schenectady	●	●	●
Saratoga Springs	●	●	●
Ft. Edward/Glens Falls	●	●	●
Whitehall	●	●	●
Castleton	●	●	
Rutland	●	●	●

1-Assumes shuttle bus service is available from the Stations to the ski resorts and other attractions.

Alternative 1 provides the best access/coverage in the study area since it retains the Ethan Allen service and also adds service along the Western Corridor of Vermont. Alternative 2 also maintains coverage through the New York portion of the study area (via the Adirondack), as well as provide access along the Western Corridor; however, Castleton Station would not be served under this alternative. The No Build maintains the existing service pattern, and the Western Corridor would continue to not be served (except for the existing station at Rutland).

Transfers Required

The major difference between the three alternatives is related to how many transfers are required to access each of the station areas in the study area.

- The No-Build Alternative would require travelers to make a transfer (bus or car) to access the Western Corridor and Mechanicville.
- Alternative 1 provides access to all station areas, with no transfers needed.
- Alternative 2 would provide access to the majority of the stations within the study area; however a transfer would be required (likely at Rutland Station) to get to Castleton.

Cumulative Travel Time

The travel time from Schenectady Station to the other stations north and west is provided in Table B2. The times are based on travel from Schenectady because the run times from Albany to Schenectady are equal for all three alternatives.

Table B2 - Cumulative Travel Time

Schenectady to:	No Build	Alternative 1	Alternative 2
Rutland	2:24[1]	2:21[3]	2:21[3]
Manchester	N/A	1:40[3]	1:40[3]
North Bennington	N/A	1:14[3]	1:14[3]
Mechanicville	N/A	0:37[3]	0:37[3]
Fort Edward	0:46[1]	0:46[1]	0:50[2]
Saratoga Springs	0:26[1]	0:26[1]	0:28[2]
Castleton	2:00[1]	2:00[1]	N/A

1- Published travel times for the Ethan Allen Express (per www.amtrak.com reservation query for 10/2/12)
2- Published travel times for the Adirondack Service (per www.amtrak.com reservation query for 10/2/12)
3- Based on the Train Performance Calculator (TPC) from the Rail Traffic Controller model created for the project.

The end-to-end (Schenectady to Rutland) run time is similar for each alternative of the three alternatives. The summary evaluation scores for each of the MOEs for this criterion are provided in Table B3.

Table B3 – Directness/Travel Time Evaluation Summary

	No Build	Alternative 1	Alternative 2
Stations Served	0	+2	+1
Transfers Required	0	+2	+1
Cumulative Travel Time	0	0	0
Overall Rating	0	+4	+2

Availability of Intermodal Connections

This criterion is a simple measure of whether there are intermodal connections (local/regional buses, other rail options) available to travelers at each station. Table B4-A provides a summary of the intermodal connections available at each station (or within ½-mile of the station), by mode. It is assumed that given the non-urban nature of most stations in the study area, most passengers would use taxis or private vehicles to transfer between modes. Table B4-B lists which stations have passenger rail connections, by Alternative.

Table B4-A: Available Intermodal Connections at Study Area Stations

Mode Type	Study Area Stations Served
Passenger Train	
Ethan Allen Express (Current)	Rutland, Castleton, Ft. Edward/Glens Falls, Saratoga Springs, Schenectady, Albany/Rensselaer
Adirondack	Whitehall, Ft. Edward/Glens Falls, Saratoga Springs, Schenectady, Albany/Rensselaer
Saratoga & North Creek	Saratoga Springs
Proposed New Service/ Rerouted Ethan Allen	Rutland, Manchester, North Bennington, Mechanicville, Schenectady, Albany/Rensselaer
Regional Bus	
Adirondack Trailways	Saratoga Springs, Schenectady, Albany/Rensselaer
Greyhound	Saratoga Springs, Schenectady, Albany/Rensselaer
Yankee Trails	Albany/Rensselaer
Local Bus	
Capital District Transit Authority	Saratoga Springs, Schenectady, Albany/Rensselaer
Marble Valley Regional Transit District	Rutland, Manchester
Greater Glens Falls Transit	Ft. Edward/Glens Falls
Green Mountain Community Network	Manchester, North Bennington
Mechanicville City Bus	Mechanicville

Table B4-B: Passenger Rail Connections, by Alternative

Condition	No Build	Alternative 1	Alternative 2
Existing	Rutland, Castleton, Whitehall, Ft. Edward/Glens Falls, Saratoga Springs, Schenectady, Albany/Rensselaer	Rutland, Whitehall, Ft. Edward/Glens Falls, Saratoga Springs, Schenectady, Albany/Rensselaer	Rutland, Whitehall, Ft. Edward/Glens Falls, Saratoga Springs, Schenectady, Albany/Rensselaer
New	N/A	Manchester, N. Bennington, Mechanicville	Manchester, N. Bennington, Mechanicville
Removed	N/A	N/A	Castleton

In terms of intermodal connections, the primary differences between the three alternatives area:

- Both Alternative 1 and 2 will improve the opportunity for intermodal connections in Manchester, North Bennington, and Mechanicville.
- Alternative 2 will remove the passenger rail connection in Castleton; however; and

- The primary regional transfer point at Albany/Rensselaer, where riders can transfer to the Lakeshore Limited or one of the Empire Service trains, will be retained for all of the alternatives.

Table B5 – Intermodal Connections Evaluation Summary

	No Build	Alternative 1	Alternative 2
Intermodal Connections	No change.	New passenger rail connections at 3 stations	New passenger rail connections at 3 stations, removed connection at 1 station
Phase Two Rating	0	+2	+1

Frequency/Ridership/Population

This criterion addresses whether the alternative will provide a frequency of service and/or routing that would make it an attractive transportation option by assessing the level of anticipated ridership. The forecast ridership of each alternative, and the population within 10 miles of each station – which may inform the local market for potential passengers, are used as measures of evaluation. Both of the Build Alternatives propose one round trip per day for the new service.

Table B6 provides the forecast annual ridership for each of the alternatives, and Table B7 gives the evaluation scores for each alternative. A summary of the ridership estimates is included as Attachment 1 to this technical memorandum.

Table B6: Annual Ridership Forecasts[1]

STATION	2010 Baseline	2030 No-Build	2030 Alternative1	2030 Alternative2
Montreal - Ft. Ticonderoga	5,200	5,700	5,700	5,700
Rutland	8,300	10,800	14,900	12,500
Castleton	1,100	1,800	1,900	0
Whitehall	900	1,000	1,000	1,000
Fort Edward/Glens Falls	4,300	4,600	4,500	3,100
Saratoga Springs	15,100	16,600	16,500	11,300
Schenectady	8,100	8,400	10,300	9,200
Manchester	--	--	4,400	4,400
N. Bennington	--	--	6,400	6,400
Mechanicsville	--	--	4,600	4,600
Albany/Rensselaer	3,200	3,400	3,700	3,300
Hudson – NY Penn	32,400	35,900	52,100	42,600
TOTAL	78,600	*88,200*	*126,000*	*104,100*

1 One-way boardings.

Table B7 – Frequency/Ridership/Population Evaluation Summary

	No Build	Alternative 1	Alternative 2
Forecasted Ridership (2030 Boardings)	88,200	126,000	104,100
Forecasted Ridership Increase	0%	42.8%	18.0%
Population	905,700	1,069,873 +18%>No Build	1,038,640 +15%> No Build
Phase Two Rating	0	+2	+1

GOAL 2: Maximize Transportation Efficiencies

Alternative Costs

These criteria provide a measure of the financial resources that will be required to make capital improvements (capital costs), to operate and maintain each alternative annually (operations and maintenance costs). Cost per rider is also assessed. Table B8 provides the projected cost and revenue information for each alternative. A summary of the capital cost estimates is included as Attachment 2 to this technical memorandum.

Table B8 – Cost Evaluation Summary

	No Build	Alternative 1	Alternative 2
Capital Cost[1,2]	$0	$112,244,000	$112,244,000
Annual O&M Cost	$6,297,000	$11,748,000	$6,889,000
Third Party Costs	$868,000	$1,884,000	$1,016,000
Route Costs	$5,429,000	$9,864,000	$5,873,000
Annual Revenue	$2,950,000	$4,431,000	$3,714,000
Net Operating Cost per Rider	$33.34	$69.61	$29.52
Phase Two Rating	0	-2	+2

1 Assumes cost for 425-foot, high level platform.
2 Cost includes: labor, burden, construction equipment use, materials, station site acquisition, permanent equipment and contractor's overhead and profit. Does not include contingency allowances.

O&M costs for each alternative were calculated based on the operating cost for the Ethan Allen service. The estimated cost for operating the Ethan Allen service during Fiscal Year 2010-11[3] was used to project the cost for the build alternatives. The 209 cost model is made up of two major cost categories: third party costs and route costs. Route costs consist of activities specific to running the route such as labor or route advertising. Third party costs are those costs paid to the host railroads so that the passenger service may operate over their right-of-way. Table B8 also shows the estimated Third Party Costs and Route Costs for FY 2012.

Annual fare revenue was calculated in the ridership model for the year 2030. The forecasted revenue was prepared using current (2012) fares for existing station-to-station trips (as accessed on the Amtrak website) and developing a similar fare structure for the proposed new stations based on distance between origin and destination. The total fare revenue for each alternative was based on the station-to-station fare multiplied by the projected number of riders traveling between those stations. The O&M costs, total[4] revenue and cost per rider reported in Table B8 are for FY 2012. These 2012 figures were determined by calculating the annual growth in ridership for the Ethan Allen from 2010 (Base Year) to the No Build 2030 scenario, and then applying that growth rate to costs and revenues from FY 2010-11.

Sustainability/Funding Opportunities

This criterion evaluates whether an alternative has the potential to be financially sustainable. The financial stability of each alternative is related

[3] Based on the cost methodology developed as part of the coordination for cost-sharing related to Passenger Rail Investment Act of 2008 (PRIIA) Section 209.

[4] Total revenue includes fare revenue (the majority), food and beverage revenue, and other revenue (advertising, etc.).

to the annual operating subsidy (annual O&M cost less the revenue generated). Since the state(s) have limited dollars, those alternatives that require fewer subsidies are preferable.

Funding and cost-sharing opportunities were also evaluated for each alternative and are presented in Table B9. VTrans is the sponsoring agency for the Ethan Allen service and would be for the new service, but could negotiate with NYSDOT on splitting the state's portion of the annual required subsidy based on train miles per state. For the existing Ethan Allen service extending from Albany north, the VTrans subsidy is based on the mileage from Fort Edwards – Glen Falls to Rutland, 44 miles, or approximately 44% of the 100-mile route. For the new route along the Western Corridor, the VTrans subsidy would cover from Mechanicville to Rutland, 81.4 miles, or approximately 81% of the 116.7-mile route. Since Alternative 2 primarily benefits Vermont, VTrans would subsidize 100% of the 116.7-mile route from Albany to Rutland. The NYSDOT subsidy includes credit that the state of New York receives on the Empire Corridor.

Table B9 – Sustainability Evaluation Summary

	No Build	Alternative 1	Alternative 2
Financial Sustainability:			
VTrans Subsidy	$1,473,000	$4,235,000	$3,175,000
NYSDOT Subsidy	$1,874,000	$3,083,000	$0
Total Subsidy	$3,347,000	$7,318,000	$3,175,000
Funding /Cost Sharing Opportunities	Yes	Yes	Yes
Phase Two Rating	0	-1	0

Construction Impacts on Operations

This criterion assesses whether the required infrastructure associated with each alternative can be built with minimum impact on the operation of existing freight and passenger rail services during construction. The No Build would have no impact on freight and passenger rail services beyond what is already planned. The impacts associated with both Build Alternatives are expected to be minimal since the sidings and other proposed improvements can be constructed adjacent to the travel way without impacting freight operations. Some coordination for cut-ins of switches would be required. Table B10 gives the evaluation score for each alternative.

Table B10 – Constructability Evaluation Summary

	No Build	Alternative 1	Alternative 2
Phase Two Rating	0	-1	-1

Additional Capacity

Each Build Alternative was analyzed to determine how much additional capacity would be added by implementing the proposed services. Table B11 summarizes the additional train miles, seat miles and revenue vehicle hours for each alternative, as well as the evaluation score.

Table B11 – Additional Capacity Evaluation Summary

	No Build	Alternative 1	Alternative 2
Train Miles (Annual)	73,000	158,410	85,410
Seat Miles (Annual)	16,352,000	117% increase over No Build	17% increase over No Build
Load Factor	65%	46%	74%
Revenue Vehicle Hours	2,250	4,249	1,996
Phase Two Rating	0	+2	+1

Reliability/Flexibility

Operational flexibility is dependent on: a) how well service can be provided to passengers when there is an obstacle or outage in some part of the system, and b) frequency of service. Alternative 1 provides operational flexibility to passengers in terms of dealing with obstacles/outages because they have the option to take either the Ethan Allen or the new service, via the Western Corridor, to travel between Rutland and Albany. Neither the No Build nor Alternative 2 provide such flexibility. In terms of flexibility related to schedule choices, the No Build Alternative and Alternative 1 provide greater schedule flexibility along the current Ethan Allen routing – travelers using the Saratoga Springs and Ft. Edward stations have two trains they can use; these passengers would only have one daily option under Alternative 2. It should be noted that although routine passenger service would not be provided between Rutland and Ft. Edward under Alternative 2, that segment of track remains and the option to run trains for emergency service would also be available.

Reliability is a function of how well the system infrastructure accommodates conflicts while still helping trains maintain schedules. Among the proposed improvements for the Build Alternatives are a

number of passing sidings included to accommodate high traffic areas. Table B12 indicated the amount of funding proposed for new passing sidings in the Build Alternatives and also gives the summary evaluation score for this criterion.

Table B12 – Reliability/Flexibility Evaluation Summary

	No Build	Alternative 1	Alternative2
Operational Flexibility	Least	Most	Limited
Costs of improvements to ensure reliability	$0	$10,973,000	$10,973,000
Phase Two Rating	0	+2	+1

Impact on Rail and Bus Operations

This criterion measures whether current bus routes and schedules would be affected by the alternative; how each alternative would impact the viability of routes and schedule of currently available passenger rail services; and how the proposed alternatives would impact existing freight operations; including consideration of such factors as operating schedules and potential improvements in infrastructure.

Minor bus reroutes and schedule adjustments are anticipated to provide local and sub-regional circulation options for arriving or departing rail passengers for Alternatives 1 and 2. For passenger rail operations, Alternative 2 reduces the frequency of service to Whitehall, Fort Edward and Saratoga Springs, though these stations would still be served by the Adirondack service, and eliminates it entirely to Castleton. Both Build Alternatives entail infrastructure improvements that would increase the maximum allowable speed (MAS) for both freight and passenger rail operations in some areas.

It is anticipated that the overall net impact to both bus and passenger rail operations will be positive for Alternatives 1 and 2 as both alternatives will produce more ridership than the No Build Alternative. The overall net impact to freight rail operations is anticipated to be neutral. No negative impacts to freight operations are anticipated due to the capacity improvements (sidings) that have been proposed; additionally, the proposed geometry improvements and additional sidings may allow for increased capacity and/or speeds on some segments.

Table B13 includes a summary of the MOEs for these criteria, as well as the evaluation scoring.

Table B13 – Multi-Modal Operations Evaluation Summary

	No Build	Alternative 1	Alternative 2
Impact on Bus Operations	No Impact	Minor reroutes and schedule adjustments to access train stations/match train schedules to facilitate intermodal connections.	
Impact on Passenger Rail Operations	No Impact	Extension of one Empire Corridor trainset serving three new towns.	Provides service to three new towns. Removes direct train service to Castleton, VT, reduces frequency of service in Ft. Edward and Saratoga Springs.
Impact on Freight Operations	No Impact	Improvement of track and sidings; potential for increased speeds.	Improvement of track and sidings; potential for increased speeds.
Phase Two Rating	0	+2	+1

Goal 3: Support Economic Development and Sustainable Development

Accessibility and Connections

These sub-criteria related to accessibility and connections evaluate how each alternative impacts access to institutional services, regional attractions and tourist destinations within the project study area, with a focus on whether an alternative would allow travelers access without needing a car. It should be noted that since only one round trip is proposed per day, the proposed service would not be considered for daily commuting; however, it does provide connectivity for an overnight trip (or longer). Also, a mode change (buses, taxis or private vehicles) will be necessary to connect passengers to most regional attractions. Table B14 provides a summary of how well each alternative satisfies these criteria, as well as the evaluation scoring.

Table B14 – Accessibility and Connections Evaluation Summary

Criteria	No Build	Alternative 1	Alternative 2
Accessibility/Connections to Employment	Provides connections between Rutland and major employers in the Albany Capitol District	Provides connections between Rutland, Manchester and Bennington and major employers in the Albany Capitol District	Provides connections between Rutland, Manchester and Bennington and major employers in the Albany Capitol District
Accessibility/Connections to Institutional Services	Provides access between Rutland and institutional services in the Albany Capitol District and New York City	Provides access between Rutland, Manchester and Bennington and institutional services in the Albany Capitol District and New York City	Provides access between Rutland, Manchester and Bennington and institutional services in the Albany Capitol District and New York City
Accessibility/Connections to Regional Attractions and Tourist Destinations	Provides access to regional attractions and destinations in the vicinity of Rutland	Provides access to regional attractions and destinations in the vicinity of Rutland, Manchester and Bennington	Provides access to regional attractions and destinations in the vicinity of Rutland, Manchester and Bennington
Phase Two Rating	0	+2	+2

Opportunities for Smart Growth/Economic Development and Support of Transit Oriented Development (TOD)

This criterion is a qualitative measure of how well each alternative supports the opportunities for TOD development efforts, and takes into account factors that would support this type of development, such as level of service, mode and location of new stations. Table B15 provides a summary of how well each alternative satisfies these criteria, as well as the evaluation scoring. Attachment 3 includes a summary of the station siting process.

Table B15 –Smart Growth, Economic Development and TOD Support Evaluation Summary

	No Build	Alternative 1	Alternative 2
Opportunities for Smart Growth/ Economic Development and Support of Transit Oriented Development (TOD)	Opportunities present in the vicinity of existing stations	Opportunities present in the vicinity of existing stations and new stations, if new stations are located in downtown areas. Improved access to regional attractions along Western Corridor will also positively impact economic development in that corridor.	Opportunities present in the vicinity of existing stations and new stations, if new stations are located in downtown areas. Improved access to regional attractions along Western Corridor will also positively impact economic development in that corridor. Reduction in service to existing stations could have minor negative effect.
Phase Two Rating	0	+2[1]	+1[1]

[1]Assumes new stations are located in downtown areas.

Goal 4: Protect Environmental Quality

The environmental criteria are intended to vet the alternatives to ensure that the alternative that is chosen as the preferred alternative will not have any significant adverse impacts on the environment. Table B16 provides a summary of how well each alternative satisfies these criteria, as well as the evaluation scoring.

Table B16 – Environmental Impact Evaluation Summary

Criteria	No Build	Alternative 1	Alternative 2
Current Land Use	No effect on existing land uses	No effect on existing land uses	No effect on existing land uses
Support for Planned Land Uses	Supports current land use, but not regional plans for economic development	Consistent with Rutland and Bennington County Regional Plans for economic development	Consistent with Rutland and Bennington County Regional Plans for economic development
Displacement and Relocation Requirements	No displacements or relocations	No displacements or relocations for sidings. Land acquisition and limited displacements may be required for new stations.	No displacements or relocations for sidings. Land acquisition and limited displacements may be required for new stations.
Environmental Justice	No effects on low income or minority populations	No effects on low income or minority populations	No effects on low income or minority populations
Impacts to Historic/ Archaeological Resources	No effects on historic or architectural resources	No effects on historic or architectural resources [pending review of new station locations	No effects on historic or architectural resources [pending review of new station locations
Impacts to 4(f) Properties	No effects to Section 4(f) properties	No effects to Section 4(f) properties	No effects to Section 4(f) properties
Air Quality	VOC and NO_x emissions are typically lower than Existing Conditions emissions due to implementation of state and federal emission control programs	Forecasted decrease in VMT (per the ridership model) is anticipated to result in a reduction to VOC, NO_x, PM and CO emissions as compared to No Build	Forecasted decrease in VMT (per the ridership model) is anticipated to result in a reduction to VOC, NO_x, PM and CO emissions as compared to No Build
Water Resources/ Floodplains	No new impacts to water quality or floodplains.	No new stormwater discharges to surface water bodies or groundwater anticipated; no impact to floodplains anticipated since rail modification is generally within the existing rail ROW	No new stormwater discharges to surface water bodies or groundwater anticipated; no impact to floodplains anticipated since rail modification is generally within the existing rail ROW

Table B16 – Environmental Impact Evaluation Summary, continued

Criteria	No Build	Alternative 1	Alternative 2
Threatened & Endangered Species	No effects to protected species or their habitat	One federally listed species and 13 state-listed species recorded near the rail bed between Manchester and Rutland. Potential impacts and avoidance measures will need to be identified during final design	One federally listed species and 13 state-listed species recorded near the rail bed between Manchester and Rutland. Potential impacts and avoidance measures will need to be identified during final design
Traffic Impacts	No significant change anticipated.	Potential decrease in traffic due to mode switch from cars to rail for trips to/from newly served stations. Marginal positive impact because this alternative produces the highest level of rail ridership, a more efficient means of transportation.	Potential decrease in traffic due to mode switch from cars to rail for trips to/from newly served stations.
Noise and Vibration Impacts	Existing noise and vibration impacts from passenger and freight rail traffic would continue.	Potential minor increases in noise and vibration at sensitive receptors close to the right-of-way along the Western Corridor and along existing passenger rail alignment from Albany to Schenectady due to new/increased service.	Potential minor increases in noise and vibration at sensitive receptors close to the right-of-way along the Western Corridor and along segment from Albany to Schenectady due to new/increased service. Potential decrease in noise and vibration along segment from Schenectady to Rutland due to rerouted Ethan Allen.
Phase Two Rating	0	-1	-1

Other Factors

A number of other factors could affect the implementation of any of the alternatives being analyzed, and could make one more or less viable than the others. These factors include Public Support for the alternative and Project Schedule Risk.

Public Support

This criterion will consider if there will be considerable public support for or opposition to the alternative.

Project Schedule Risk

This criterion considers factors that could delay implementation of the project, including:

- Prerequisite projects; such projects may be necessary to satisfy operational requirements or to address/adhere to federal guidelines or requirements; and
- Obtaining approvals from key stakeholders, including the potential host railroad owners and the state Departments of Transportation

Table B17 provides a summary of how each alternative is affected by these factors, as well as the evaluation scoring.

Table B17 –Summary of Other Impacts

	No Build	Alternative 1	Alternative2
Public Support	Minimal	Support has been split between Alternatives 1 and 2 at public meetings and in comments on the project website. Alternative 1 is praised for providing new service to the Western Corridor, while retaining all existing service in the corridor currently served Ethan Allen; however, it is acknowledged that Alternative 2 may be the more cost-feasible means of providing access to passenger rail service in the Western Corridor.	
Prerequisite projects	None	None	None
Approvals needed	None	FRA, NY and VT, Pan Am, CP, Amtrak	FRA, NY and VT, Pan Am, CP, Amtrak

Summary and Conclusions

Table B18 includes a summary of the evaluation scores for the Phase Two screening criteria; Table B19 follows with a summary of the key information and findings from the Phase II analyses, by Alternative.

Table B18 –Summary of Evaluation Scores

	No Build	Alternative 1	Alternative 2
GOAL 1 – Extend Intercity Passenger Rail Access and Improve Mobility			
Directness to Key Regional Destinations	0	+2	+1
Transfers Required	0	+2	+1
Cumulative Travel Time	0	0	0
Availability of Intermodal Connections	0	+2	+1
Frequency/Ridership /Population	0	+2	+1
Goal 1 Total:	*0*	*+8*	*+4*
Best Fit Alternative:		X	
GOAL 2 – Maximize Transportation Efficiencies			
Cost Evaluation	0	-2	+2
Construction Impacts on Operations	0	-1	-1
Sustainability/Funding Opportunities	0	-1	0
Additional Capacity	0	+2	+1
Reliability/Flexibility	0	+2	+1
Impacts to Rail and Bus Operations	0	+2	+1
Goal 2 Total:	*0*	*+2*	*+4*
Best Fit Alternative:			X
GOAL 3 – Support Economic Development and Sustainable Development			
Accessibility/Connections	0	+2	+2
Smart Growth	0	+2	+1
Goal 3 Total:	*0*	*+4*	*+3*
Best Fit Alternative:		X	
GOAL 4 – Protect Environmental Quality			
Environmental Impacts	0	-1	-1
Goal 4 Total:	*0*	*-1*	*-1*
Best Fit Alternative:		Alternatives 1 & 2 tie	
TOTAL:	0	+13	+10
Preferred Alternative:		X	

Table B19 breaks down the evaluation scores by goal and reveals the following trends:

- Both Build Alternatives propose adding service in the Western Corridor of Vermont, but ***Alternative 1 best satisfies Goal 1*** because it adds service to new segments of the study area without removing service from any existing station areas. Under Alternative 2, service would still be available along much of the existing Ethan Allen alignments – via the Adirondack Service; however, there would be one less roundtrip available for portions of the current Ethan Allen alignment. Additionally, Castleton will no longer be served directly by passenger rail.
- ***Alternative 2 best satisfies Goal 2***, due in major part to the cost difference associated with running two services (Alternative 1) versus one service (Alternative 2). Alternative 2 outperforms both the No Build and Alternative 1 in terms of the net cost per rider and the subsidy that would be required to support the service.
- ***Alternatives 1 best satisfies Goal 3***, and is anticipated to slightly better support economic development and sustainable development. The major driver for both of these objectives will be the placement of new stations, which will be the same for both Alternatives. The removal of one round trip, as is proposed under Alternative 2, may have some negative impact to economic development at the stations were service is reduced.
- Both Alternative 1 and 2 are expected to have a similar (minimal) impact on the environment. It should be noted that both Build alternatives would also have potential for reduced traffic and improved air quality due to a reduction in annual VMT.

Conclusion

The purpose of the screening process is to identify which alternative(s) best satisfy the Purpose and Need for the project, which states:

> The purpose of this project is *to identify and establish an efficient intercity passenger rail-based transportation link that will benefit un-served and underserved communities in southwestern Vermont and eastern central New York. The project would provide intercity passenger rail connections between Rutland, Vermont and Albany, New York, with new intercity passenger rail*

services in southwestern Vermont and improvements to existing intercity passenger rail services in eastern central New York State. The project would also provide a key link along Vermont's "Western Corridor", with improved connections to passenger rail services in New York and beyond via Albany and/or Schenectady, New York.

The Build Alternatives described herein are best able to satisfy the goal of providing passenger rail service along Vermont's Western Corridor. Notably, both alternatives:

- Provide access to passenger rail service at three new stations where there is no current service;
- Increase ridership over the No Build Alternative; and
- Due to improved access to passenger rail, provide for improved economic development opportunities along the Western Corridor.

As has been noted previously, the major difference between the two Build Alternatives is that Alternative 1 provides new service in the Western Corridor, while preserving both existing frequencies of service through the New York portion of the study area, while Alternative 2 would reroute the Ethan Allen from its existing alignment into the Western Corridor – leaving a single frequency of service (the Adirondack Service) through the New York portion of the study area. This distinction has the greatest impacts on ridership and operations and maintenance costs; the major pros and cons for each of the Build Alternatives are summarized below.

Alternative 1

Pros: Provides equivalent (to existing) or better access to passenger rail service *throughout* the study area; wider range of mode choices throughout the study area; operational and schedule flexibility in the New York portion of the study area, as compared to Alternative 2; higher anticipated ridership than Alternative 2.

Cons: Higher operating cost than Alternative 2.

Alternative 2

Pros: Lower operating costs than Alternative 1; provides service to the Western Corridor.

Cons: Removes one frequency or service along the existing Ethan Allen corridor, which negatively impacts anticipated ridership.

Based on this Phase Two evaluation, Alternative 1 is the Preferred Alternative recommended for further development.

Table B19 – Evaluation Summary Table

	No Build	Alternative 1: New Service to Rutland	Alternative 2: Reroute Ethan Allen
Goal 1: Extend Intercity Passenger Rail Access and Improve Mobility			
Directness/Travel Time to Key Regional Destinations: • Directness of the trip to key regional destinations.	Train access is provided to regional destinations in the New York portion of the study area only (along the Ethan Allen corridor).	Train access is provided to regional destinations in both New York (Adirondack and Ethan Allen) and in the Western Corridor of Vermont (New Service).	Train access is provided to regional destinations in both New York (Adirondack) and in the Western Corridor of Vermont (rerouted Ethan Allen).
• Transfers required	Required for access to Western Corridor	No transfers required.	Requires a transfer at Rutland to get to Castleton.
• Cumulative travel time (Schenectady to study area stations)	*Schenectady to:*	*Schenectady to:*	*Schenectady to:*
	Rutland 2:24 Manchester N/A North Bennington N/A Mechanicville N/A Fort Edward 0:46 Saratoga Springs 0:26 Castleton 2:00	Rutland 2:21 Manchester 1:40 North Bennington 1:14 Mechanicville 0:37 Fort Edward 0:46 Saratoga Springs 0:26 Castleton 2:00	Rutland 2:21 Manchester 1:40 North Bennington 1:14 Mechanicville 0:37 Fort Edward 0:50 Saratoga Springs 0:28 Castleton N/A
Availability of Intermodal Connections: • Presence of intermodal connections at each station.	Train: Connections to other routes at 4 stations in the study area. Local Bus: Connections at 6 stations. Regional Bus: Connections at 3 stations.	Train: Connections to other routes at 5 stations in the study area. Local Bus: Connections at 9 stations. Regional Bus: Connections at 3 stations.	Train: Connections to other routes at 2 stations in the study area. Local Bus: Connections at 8 stations. Regional Bus: Connections at 3 stations.
Frequency/Ridership[5]/ Population within 10-mile Radius of study area stations (2010 Census)	1 train per day. Total ridership: 88,200 Population: 905,700	1 train per day. Total ridership: 126,000 Population: 1,069,873 (18% increase)	1 train per day. Total ridership: 104,100 Population: 1,038,640 (15% increase)

[5] Ridership numbers reflect one-way boardings with one trip end associated with a station in the study area.

Table B19 – Evaluation Summary Table (Continued)

	No Build	Alternative 1: New Service to Rutland	Alternative 2: Reroute Ethan Allen
Goal 2: Maximize Transportation Efficiencies			
Capital Cost	$0	$112,244,000	$112,244,000
Annual Operations and Maintenance Cost	$6,297,000	$11,748,000	$6,889,000
Annual Revenue	$2,950,000	$4,431,000	$3,714,000
Net Operating Cost per Rider	$33.34	$69.61	$29.52
Constructability • Impact on the operation of existing freight and passenger rail services during construction.	No additional impact.	No major impacts are anticipated to existing freight or passenger rail operations during construction.	No major impacts are anticipated to existing freight or passenger rail operations during construction.
Sustainability/Funding Opportunities • Financially sustainable.	No change from existing.	Highest O&M costs due to operating two services. 117 percent increase in annual train miles vs. 43 percent increase in ridership (revenue).	17 percent increase in annual train miles vs. 18 percent increase in ridership (revenue).
Funding and cost-sharing opportunities	VTrans is the sponsoring agency for the Ethan Allen (EA) service. VTrans splits the annual O&M subsidy with NYSDOT based on each state's portion of the total train miles. EA: 44 miles (VT), 56 miles (NY) $1,473,000 (VT), $1,874,000 (NY)	VTrans would be the sponsoring agency for new service, but could negotiate with NYSDOT on splitting the state's portion of the annual O&M subsidy by train miles per state. EA: 44 miles (VT), 56 miles (NY) New Service: 82 miles (VT), 35 miles (NY) $4,235,000 (VT), $3,083,000 (NY)	VTrans would be the sponsoring agency for the rerouted Ethan Allen (EA) service. Since this alternative primarily benefits Vermont, VTrans would be responsible for 100% of the annual O&M subsidy. Rerouted EA: 117 miles (VT), 0 miles (NY) $3,175,000 (VT), $0 (NY)
Additional Capacity Train Miles (annual)	73,000	158,410	85,410

Table B19 – Evaluation Summary Table (Continued)

	No Build	Alternative 1: New Service to Rutland	Alternative 2: Reroute Ethan Allen
Seat Miles[6] (annual)	16,352,000	117% increase over No Build	17% increase over No Build
Revenue Vehicle Hours	6.17 hr/day*365= 2,250	(6.17(EA)+5.47(New))*365=4,249	5.47hr/day*365= 1,996
• Operational flexibility	No additional operational flexibility over existing condition.	Provides the opportunity, in the event of a disruption, to get trains from Rutland to Albany via two routes (redundant routes). No additional flexibility over existing condition for other stations in the study area.	No additional operational flexibility over existing condition.
• Costs of improvements to ensure reliability	None	$10,973,000	$10,973,000
Impact on Bus Operations	None	Minor rerouting to access rail stations	Minor rerouting to access rail stations
Impacts to Existing Passenger Rail Operations	None	Extension of one Empire Corridor trainset	Relocation of Ethan Allen service to Western Corridor
Impacts to Freight Operations	None	Improvement in track and sidings	Improvement in track and sidings
Goal 3: Support Economic Development and Sustainable Development			
Accessibility/Connections to Employment Connections to major employers	Provides connections between Rutland and major employers in the Albany Capitol District	Provides connections between Rutland, Manchester and Bennington and major employers in the Albany Capitol District	Provides connections between Rutland, Manchester and Bennington and major employers in the Albany Capitol District
Allow access without needing a car	Provides transit access between Rutland, Albany Capitol District, and New York City	Provides transit access between Rutland, Manchester, Bennington and Albany Capitol District, and NYC	Provides transit access between Rutland, Manchester, Bennington, Albany Capitol District, & NYC

[6] Assumes 4-car trainset for each alternative (2 coaches, 1 business class, 1 club dinette=224 seats).

Table B19 – Evaluation Summary Table (Continued)

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	No Build	Alternative 1: New Service to Rutland	Alt.2: Reroute Ethan Allen
Accessibility/Connections to Institutional Services	Provides access between Rutland and institutional services in the Albany Capitol District and New York City	Provides access between Rutland, Manchester and Bennington and institutional services in the Albany Capitol District and New York City	Provides access between Rutland, Manchester and Bennington and institutional services in the Albany Capitol District and New York City
Accessibility/Connections to Regional Attractions and Tourist Destinations	Provides access to regional attractions and destinations in the vicinity of Rutland	Provides access to regional attractions and destinations in the vicinity of Rutland, Manchester and Bennington	Provides access to regional attractions and destinations in the vicinity of Rutland, Manchester and Bennington
Opportunities for Smart Growth/Economic Development and Support of Transit Oriented Development (TOD)	Opportunities present in the vicinity of existing stations	Opportunities present in the vicinity of existing stations and new stations, if new stations are located in downtown areas. Consistent with Rutland and Bennington County Regional Plans for economic development.	Opportunities present in the vicinity of existing stations and new stations, if new stations are located in downtown areas. Consistent with Rutland and Bennington County Regional Plans for economic development.
Goal 4: Protect Environmental Quality			
Land Use • Current land uses within the study area	No effect on existing land uses	No effect on existing land uses	No effect on existing land uses
• Support for planned land uses	Supports current land use	Consistent with Rutland and Bennington County Regional Plans	Consistent with Rutland and Bennington County Regional Plans
Displacement and Relocation Requirements	No displacements or relocations	No displacements or relocations. Minor land acquisition (of undeveloped land) required for new stations.	No displacements or relocations. Minor land acquisition (of undeveloped land) required for new stations.
Environmental Justice	No effects on low income or minority populations	No effects on low income or minority populations	No effects on low income or minority populations
Impacts to Historic or Architectural Resources	No effects on historic or architectural resources	No effects on historic or architectural resources [pending review of new station locations]	No effects on historic or architectural resources [pending review of new station locations]
Impacts to Section 4(f) Properties	No effects to Section 4(f) properties	No effects to Section 4(f) properties	No effects to Section 4(f) properties

Table B19 – Evaluation Summary Table (Continued)

DRAFT

	No Build	Alternative 1: New Service to Rutland	Alt.2: Reroute Ethan Allen
Air Quality	VOC and NO_x emissions are typically lower than Existing Conditions emissions due to implementation of state and federal emission control programs	Forecasted decrease in VMT (per the ridership model) is anticipated to result in a reduction to VOC, NO_x, PM and CO emissions as compared to No Build	Forecasted decrease in VMT (per the ridership model) is anticipated to result in a reduction to VOC, NO_x, PM and CO emissions as compared to No Build
Water Resources/ Floodplains	No new impacts to water quality or floodplains.	No new stormwater discharges to surface water bodies or groundwater anticipated; no impact to floodplains anticipated since rail modification is generally within the existing rail ROW	No new stormwater discharges to surface water bodies or groundwater anticipated; no impact to floodplains anticipated since rail modification is generally within the existing rail ROW
Threatened & Endangered Species	No effects to protected species or their habitat	One federally listed species and 13 state-listed species recorded near the rail bed between Manchester and Rutland. Potential impacts and avoidance measures will need to be identified during final design	One federally listed species and 13 state-listed species recorded near the rail bed between Manchester and Rutland. Potential impacts and avoidance measures will need to be identified during final design
Traffic Impacts	No significant change anticipated.	Potential decrease in traffic due to mode switch from cars to rail for trips to/from newly served stations.	Potential decrease in traffic due to mode switch from cars to rail for trips to/from newly served stations.
Noise and Vibration Impacts	Existing noise and vibration impacts from passenger and freight rail traffic would continue.	Potential minor increases in noise and vibration along existing passenger rail routes due to increased service. Potential to increase noise and vibration impacts at sensitive receptors close to the right-of-way along the western corridor.	Potential to increase noise and vibration impacts at sensitive receptors close to the right-of-way along the western corridor. Potential decrease in noise and vibration along segment from Whitehall to Rutland if Ethan Allen service is rerouted.
Other Factors			
Public Support	Minimal	Support has been split between Alternatives 1 and 2 at public meetings and in comments on the project website. Alternative 1 is praised for providing new service to the Western Corridor, while retaining all existing service in the corridor currently served Ethan Allen; however, it is acknowledged that Alternative 2 may be the more cost-feasible means of providing access to passenger rail service in the Western Corridor.	

Table B19 – Evaluation Summary Table (Continued)

DRAFT

	No Build	Alternative 1: New Service to Rutland	Alt.2: Reroute Ethan Allen
Project Schedule Risk • Prerequisite projects	None	None	None
• Approvals needed	None	FRA, NY and VT, Pan Am, CP, and Amtrak	FRA, NY and VT, Pan Am, CP, and Amtrak

B-1

Attachment 1

Technical Memorandum – Ridership Update

DRAFT

Planning | Transportation | Land Development | Environmental

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Memorandum

To: Costa Pappis, VTRANS

Date: May 3, 2013 (Revised January 8,2014)

Project No.: 11518.00

From: Lara Webster, VHB

Re: NY-VT Ridership and Revenue Forecasts Revision and Update

The purpose of this memorandum is to present the results of the revised ridership forecast for the NY-VT Intercity Passenger Rail Study Area. Three alternatives were analyzed:

1) No Build Alternative
2) Alternative 1 – New Service to SW Vermont
3) Alternative 2 – Rerouted Ethan Allen Service

For both Build alternatives, service would be provided to Rutland via the "Western Corridor"; however Alternative 1 retains the Ethan Allen service – which provides service to Rutland through New York – and Alternative 2 reroutes the Ethan Allen through southwest Vermont. Both alternatives assume the routing from Albany to Mechanicville is via Schenectady. **Figures 1** and **2** below, illustrate the two Build alternatives.

Figure 1: Alternative 1 – New Service to SW Vermont

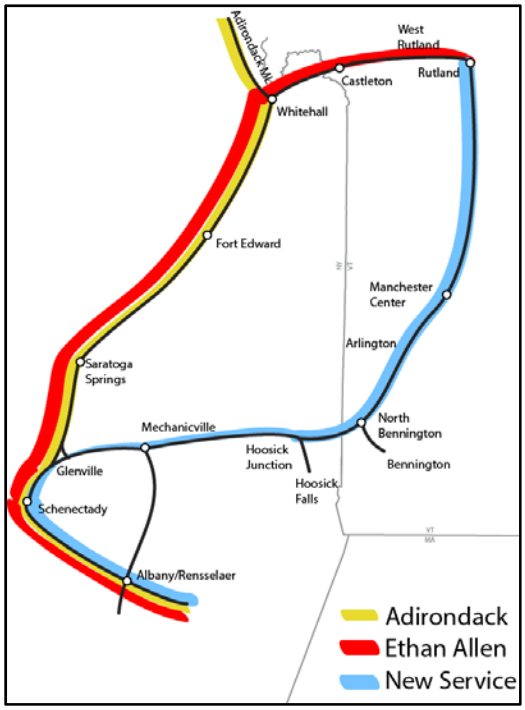
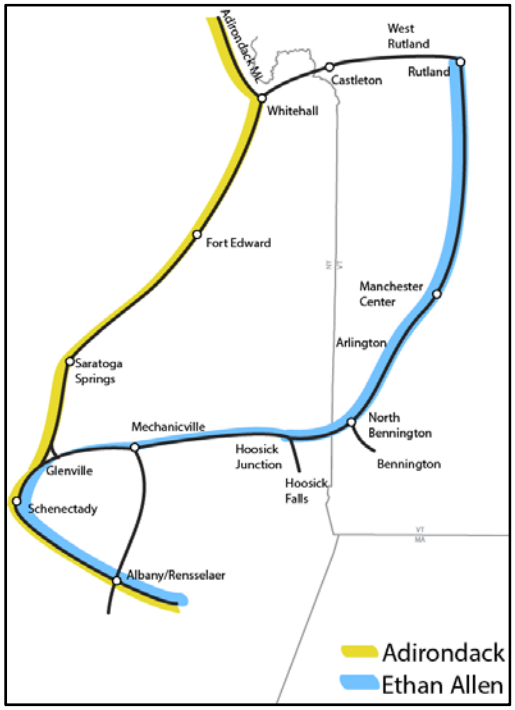


Figure 2: Alternative 2 – Rerouted Ethan Allen Service



The original ridership forecasts were developed using an analytical procedure considering the following information:

- Existing demographic and economic conditions in Study Area;
- Forecasted demographic and economic conditions in the Study Area;
- Rail ridership of existing services in the region, specifically the ridership of the Adirondack and Ethan Allen services operated by Amtrak;
- Ridership for station pairs served by the Adirondack and Ethan Allen services;
- Service level and fare of existing and proposed rail service in the region; and
- Travel time, operating costs and toll costs of automobile drivers or passengers in the region

The ridership forecasting procedure is district-to-district based. The Study Area has been divided into traffic districts, each representing the catchment area of an existing or new rail station. For the purposes of the ridership analysis, the catchment areas were defined as the 10-mile buffer around each station. If a portion of a town fell within 10 miles of a station it was assigned to a station (Figure 3). Towns that fell within 10 miles of two stations were assigned to the closest station.

Figure 3: Catchment Areas of Stations

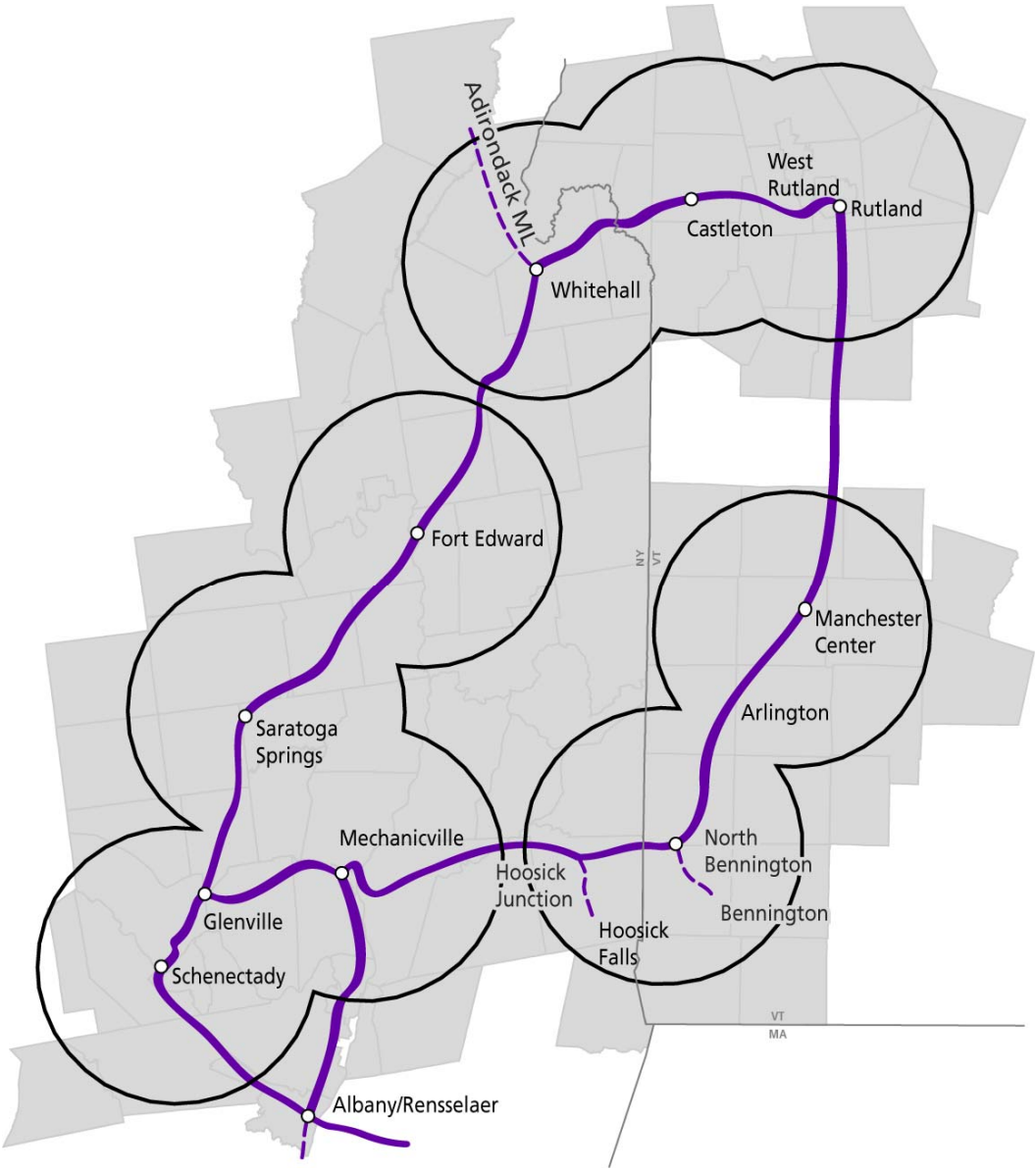
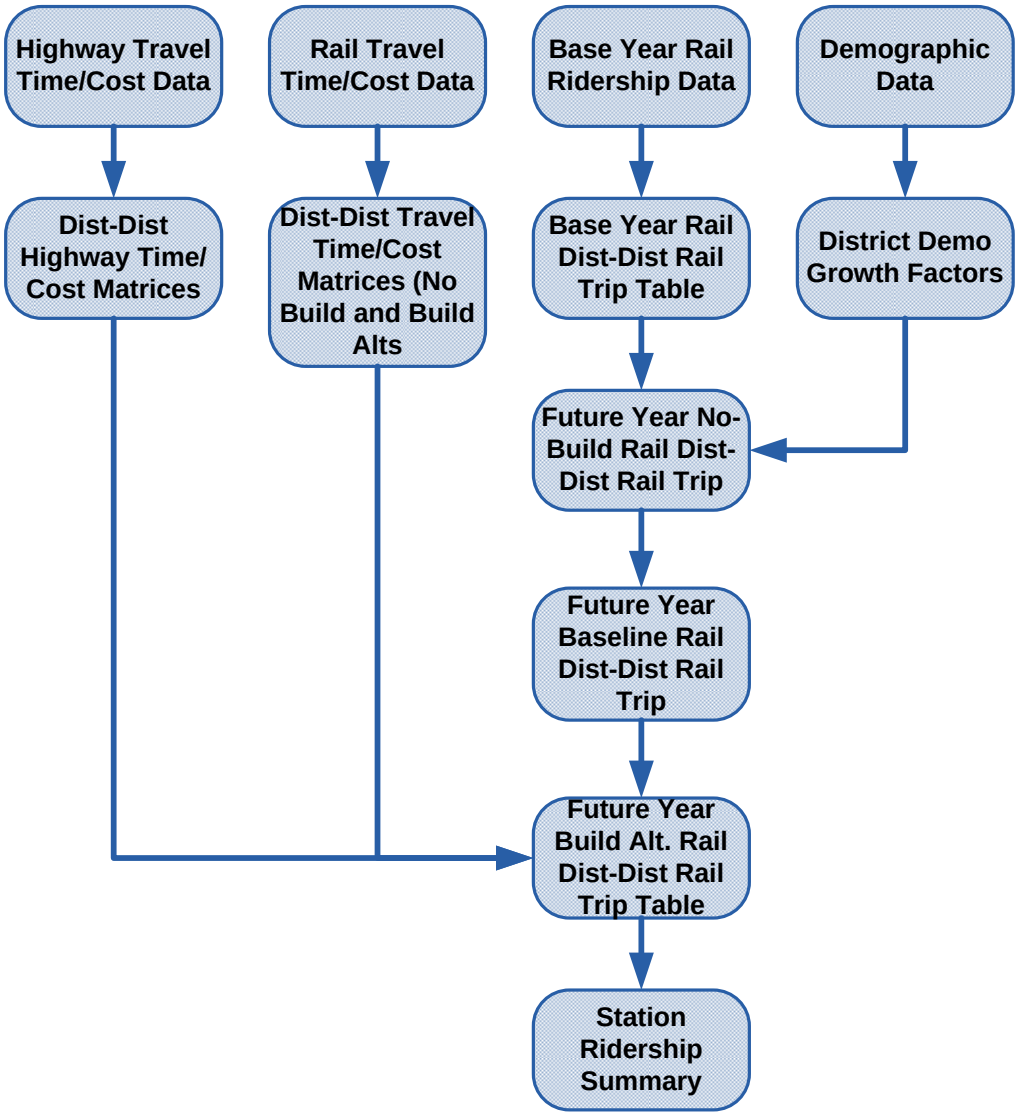


Figure 4 provides a flow chart of the ridership forecasting methodology.

Figure 4: Ridership Forecasting Process



District Demographic Data

The demographic data (households, population and employment) were assembled for each traffic district. The data were derived from the demographic data of the area travel demand models received from the State of Vermont, the Capital District Transportation Committee (CDTC) and the Adirondack/Glen Falls Transportation Council (AGFTC). Table 1 summarizes the existing and projected demographic data by traffic district.

Table 1: Households and Employment by Traffic District

Station	2010 Households	2010 Employment	2030 Households	2030 Employment
Rutland	16,400	22,100	20,300	32,700
Castleton	4,900	3,900	6,500	5,900
Whitehall	9,900	8,500	10,900	9,200
Fort Edwards	28,200	34,600	31,000	36,800
Saratoga Springs	32,300	36,500	37,700	38,300
Schenectady	92,200	97,800	99,100	101,700
Manchester	5,400	6,300	7,000	12,600
North Bennington	14,000	16,100	15,300	21,100
Mechanicsville	34,500	28,100	40,200	34,400

District-to-District Travel Time/Cost Matrices

The district-to-district travel time and travel cost matrices for the rail mode and automobile mode were assembled based on data from:

- AMTRAK schedule and fare information
- Proposed service plans of the build alternatives
- A GIS roadway network covering the study area. Travel times were based on distances and assumed travel speeds. The travel speeds were based on regional travel demand model assumptions and posted speed limits.
- For the rail mode, the following district-to-district matrices were generated:
- In-vehicle times (time spent on rail train)
- Average wait time derived from the service frequency
- Rail fare
- Auto access and egress time

For the auto mode, the average travel time and operation cost matrices were generated based on the highway network developed for this study.

Base Year Rail Trip Table

The base year station to station rail trip table was constructed based on collected ridership data provided by Amtrak. Amtrak provided the station ridership on the Adirondack and Ethan Allen services, as well as ridership of major station-to-station pairs on these lines. Based on these two sets of data, an estimation procedure was applied to derive the complete station-to-station rail trip table of the two rail lines.

The following table summarizes the Year 2010 annual ridership of existing rail stations in the study region.

Table 2: Year 2010 Baseline Station Ridership

Station	Baseline Ridership [1]	Households within 10 miles of station	Rail Ridership/HH
Rutland	16,600	16,400	1.00
Castleton	2,200	4,900	0.45
Whitehall	1,800	9,900	0.18
Fort Edward	8,600	28,200	0.30
Saratoga Springs	30,200	32,300	0.94
Schenectady	16,200	92,200	0.18

[1] Values refer to annual boardings and alightings combined.

Table 3 shows the results of the revised ridership forecasts.

Table 3 – Revised Annual Boardings Forecasts

Year	No Build	Alternative 1	Alternative 2
2010	78,600	--	--
2030	88,200	126,000	104,100

The ridership results reflect refinements to the model to reflect the following:

- **Updated (train) travel times**. The travel times used in the refined model are based on the Rail Traffic Controller (RTC) model. The infrastructure used in the model was prepared to run the model's Train Performance Calculator (TPC) which calculated travel times between station based on the operating speeds of the train, the tractive effort and braking, station stops and cumulative travel times. The times used for the original ridership analysis were calculated based on distance between stations, assumed Maximum Allowable Speed (MAS), and a (conservative) impedance factor that was applied across the board. The travel times generated as part of the TPC run are faster than the originally calculated times.
- **Updated fares**. For the original iteration of the ridership analysis, fares were matched to existing, published fares for Amtrak trips (Ethan Allen or Adirondack) of similar trip length for the trip pairs in the study area. The refined ridership model reflects current fares for the Ethan Allen service and incremental fares based on average cost per mile for non-Ethan Allen trip pairs.

Refined forecasts were completed for the No Build and the two Build alternatives still being analyzed. **Table 4** shows the updated annual boardings forecast for the years 2013 through 2017. To develop estimates for 2013 through 2017, the rate of growth from the 2010 to 2030 No-Build boardings was determined, and a straight line percentage difference in ridership was assumed for the interim years for each alternative.

Table 4 – 2013 - 2017 Annual Boardings

Year	No Build	Alternative 1	Alternative 2
2013	79,980	114,100	98,350
2014	80,440	114,770	98,920
2015	80,910	115,440	99,500
2016	81,380	116,120	100,080
2017	81,860	116,800	100,670

Table 5 provides the revised annual boardings by station for the 2010 base year and projected to 2030.

Table 5 – Revised 2030 Annual Boardings Forecasts

Station	2010	2030		
	No Build	No Build	Alternative 1	Alternative 2
Montreal - Ft. Ticonderoga	5,200	5,700	5,700	5,700
Rutland	8,300	10,800	14,900	12,500
Castleton	1,100	1,800	1,900	0
Whitehall	900	1,000	1,000	1,000
Fort Edward	4,300	4,600	4,500	3,100
Saratoga Springs	15,100	16,600	16,500	11,300
Schenectady	8,100	8,400	10,300	9,200
Manchester	--	--	4,400	4,400
North Bennington	--	--	6,400	6,400
Mechanicville	--	--	4,600	4,600
Albany/Rensselaer	3,200	3,400	3,700	3,300
Hudson - NY Penn	32,400	35,900	52,100	42,600
Total	**78,600**	**88,200**	**126,000**	**104,100**

Note: Ridership numbers reflect one-way boardings.

Table 6 presents the projected boardings by station and service. Stations that would be served by more than one service have had their annual boardings divided approximately equally between the services.

Table 6 – Annual Boardings by Service

	2,010 No Build		2030 No Build		2030 Alternative 1			2030 Alternative 2	
Station	Adirondack	Ethan Allen	Adirondack	Ethan Allen	Adirondack	Ethan Allen	New Service	Adirondack	Ethan Allen
Montreal - Ft. Ticonderoga	2,600	2,600	5,700		5,700			5,700	
Rutland		8,300		10,800		7,450	7,450		12,500
Castleton		1,100		1,800		1,900			
Whitehall	450	450	500	500	1,000			1,000	
Fort Edward	2,150	2,150	2,300	2,300	1,500	1,500	1,500	3,100	
Saratoga Springs	7,550	7,550	8,300	8,300	5,500	5,500	5,500	11,300	
Schenectady	4,050	4,050	4,200	4200	3,500	3,400	3,400	4,600	4,600
Manchester							4,400		4,400
North Bennington							6,400		6,400
Mechanicville							4,600		4,600
Albany/Rensselaer	1,600	1,600	1,700	1,700	1,300	1,200	1,200	1,700	1,600
Hudson - NY Penn	16,200	16,200	17,950	17,950	17,400	17,350	17,350	22,400	20,200
Total	34,600	44,000	40,650	47,550	35,900	38,300	51,800	49,800	54,300
Adirondack + Ethan Allen + New Service	**78,600**		**88,200**		**126,000**			**104,100**	

The ridership within the study area was forecasted based on the methodology described above. Some post-processing was completed to reassign boardings for unlikely trip pairs – for instance while a trip from North Bennington to Castleton would be possible via rail, it would require a transfer and would be neither time nor cost effective. These types of trips were reassigned using professional judgment to nearby major transfer points (i.e. Rutland, Schenectady or Albany).

The ridership results indicate the following:

- A significant portion of the increase in boardings for the Build alternatives (41% for Alternative 1, and 97% for Alternative 2) is generated at the new stations at Manchester, North Bennington, and Mechanicville.
- Another significant portion of the increase in boardings for the Build alternatives is generated by trips to the New York City metro area; this result is expected since the New Service (or rerouted Ethan Allen) would improve access between Vermont's Western Corridor and New York City.
- There is also a significant increase in boardings at Rutland station. This large increase is expected because Rutland is the terminal station and will provide access to a larger catchment area than the other stations in the Study Area. Providing the

option for travel through the Western Corridor is also expected to be attractive for passengers in both directions as it will provide a slightly shorter travel time.

- Differences in boardings between the two Build alternatives are primarily seen in those stations that will lose a frequency of service (Ft. Edward, Saratoga Springs), the model indicates that there is a mode shift for many of these "lost" trips.
- At both Schenectady and Rutland Stations a moderate number of additional boardings are anticipated for Alternative 1 vs. Alternative 2. The difference in boardings is greater at Schenectady Station because it is anticipated that many of the riders that currently use Castleton Station would instead access the system at Rutland Station under Alternative 2 – this behavior causes a "bump" in boardings at Rutland Station for Alternative 2.

Projected Fare Revenue

Annual revenue was calculated in the ridership model for the year 2030. The ridership forecast procedure included use of a station-to-station trip matrix, with forecast ridership calculated for each pairing. Total fare revenues were calculated by multiplying the station-to-station trip matrix with the attendant station-to-station fare matrix. The forecasted revenue was prepared using current fares for existing station-to-station trips (as accessed on the Amtrak website) and developing a similar fare structure for the proposed new stations based on distance between origin and destination. **Table 7** shows the projected 2030 annual revenues as well as adjusted 2013 ticket revenue projections based on the Pro Forma revenues shown in the PRIIA 209 Cost Methodology that has been prepared for the Ethan Allen Service. The adjusted revenue estimates were calculated by factoring the 2030 projections to the actual ticket revenues from FY'2010-11 (as reported in the 209 Cost Methodology).

Table 7 – Fare Revenue Forecasts

Revenue Forecasts	No Build	Alternative 1	Alternative 2
2030 Revenue	$4,371,000	$6,566,000	$5,504,000
2013 Revenue	$2,839,000	$4,264,000	$3,574,000

Table 8 provides the annual revenue forecast for each alternative for the years 2013 through 2017. Similar to the interim year ridership forecasts, the interim year revenue forecasts are based on a straight line extrapolation of the difference between the calculated 2010 and 2030 revenues.

Table 8 – 2013 – 2017 Annual Fare Revenue Forecasts

Year	No Build	Alternative 1	Alternative 2
2013	$ 2,839,000	$ 6,565,600	$ 3,574,464
2014	$ 2,929,129	$ 6,700,976	$ 3,687,942
2015	$ 3,019,259	$ 6,836,351	$ 3,801,420
2016	$ 3,109,388	$ 6,971,727	$ 3,914,898
2017	$ 3,199,518	$ 7,107,102	$ 4,028,376

B-2

Attachment 2

Technical Memorandum – Capital Cost Estimate

VHB
Planning | Transportation | Land Development | Environmental

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7056 U.S. Route 7
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Memorandum

To: Costa Pappis, VTRANS

Date: March 29,2012

Project No.: 11518.00

From: VHB

Re: NY-VT Final Capital Cost Estimate

The purpose of this memorandum is to present the revised capital cost estimates for the NY-VT Intercity Passenger Rail Study Area. There are two components to the capital cost estimates – costs for track improvements, and station costs. This document provides the following:

- A summary of the alternatives estimated and the segments used in this estimate.
- A description of the work defined for each alternative for each segment.
- A description of the unit costs and their development for use in this estimate.
- A summary capital cost estimate for each alternative.

ALTERNATIVES ANALYZED & ANALYSIS SEGMENTS

Three alternatives were analyzed:

1) No Build Alternative
2) Alternative 1 – New Service to SW Vermont
3) Alternative 2 – Rerouted Ethan Allen Service

For both Build alternatives, service would be provided to Rutland via the "Western Corridor"; Alternative 1 retains the Ethan Allen service on its current alignment and adds a new service through southwest Vermont, while Alternative 2 reroutes the Ethan Allen through southwest Vermont. Both alternatives assume the routing from Albany to Mechanicville is via Schenectady. **Figures 1** and **2** below, illustrate the two Build alternatives.

Figure 1: Alternative 1

Figure 2: Alternative 2

To run the proposed new/rerouted service from Albany to Rutland via Schenectady and the Western Corridor (shown in blue in **Figures 1** and **2**), various infrastructure improvements are required to meet the targeted Maximum Allowable Speed (MAS) of 60MPH and provide sufficient capacity in the system to eliminate conflicts with the freight operations. Preliminary engineering has been completed to identify the necessary improvements for each alternative.

For the purposes of the preparing the capital cost estimate, the existing rail corridors in the project study area were divided into 10 segments, shown in **Figure 3**. Improvements are required for segments 2, 6, 8, 9 and 10 to accommodate the new or rerouted service through the Western Corridor of Vermont that are proposed in the Build Alternatives. The same capital improvements are required for Alternatives 1 and 2. **Table 1** provides a summary of the track improvements by segment. Segment 1 was not included in this table because it assumed no improvements on this segment are needed on both the signal and rail systems. Segment 5 was not included in the table because it has been eliminated from the study.

Figure 3: Segments Used in Cost Estimating

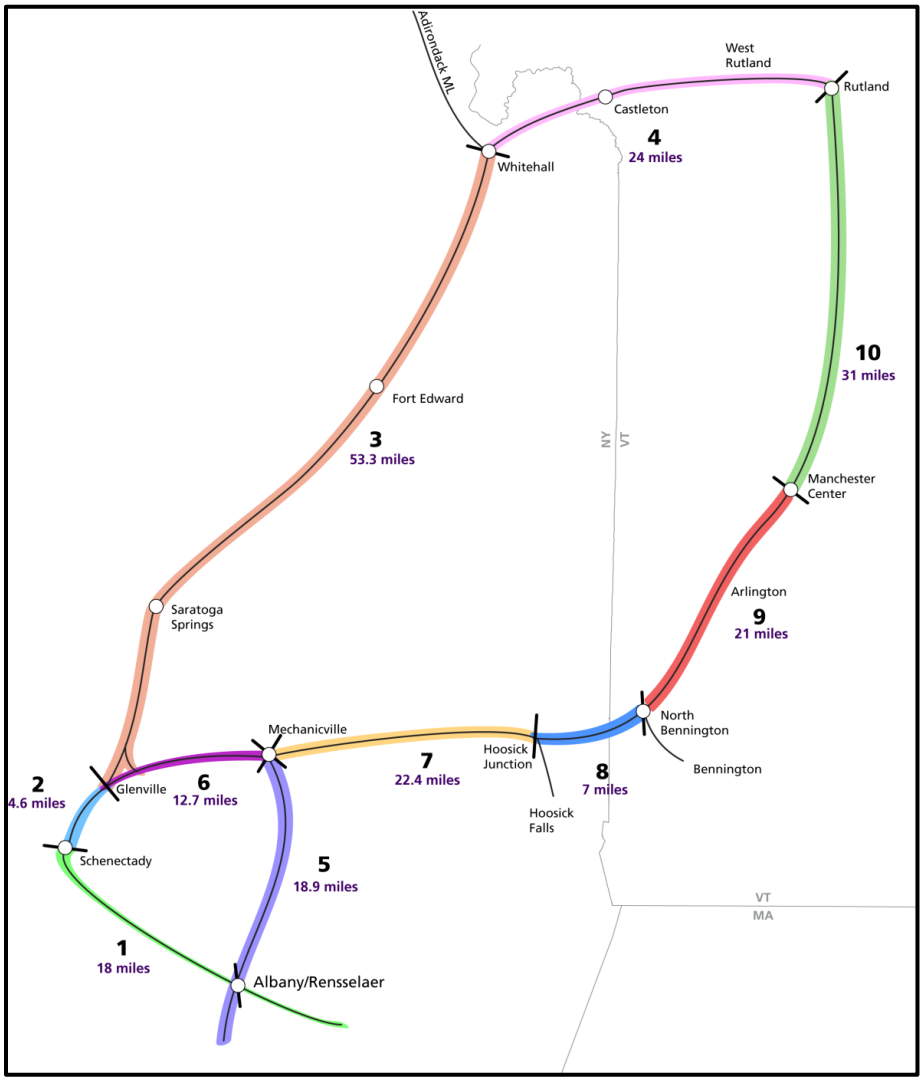

Table 1: Track Improvements

#	Segment	Proposed Infrastructure Improvements
2	Schenectady to CPF 480 (Glenville)	• 700’ of new mainline for new alignment through CPF 480, all existing Public Grade crossings will require warning system modifications • No track work required on existing mainline, 50’ wide crossings assumed • Signal system costs include electronic in-track signal system and interlocking tie-ins • Aplaus Kill River Bridge needs upgrade to run double track; two turnouts at Aplaus Kill River Bridge will be retired
6	CPF 480 (Glenville) to Mechanicville	• 2.5 miles of new sidings for congestion relief, all existing Public Grade crossings will require warning system modifications • Signal system costs include electronic in-track signal system and interlocking tie-ins • Two #20 crossovers, one #15 crossover, three #20 turnouts, and one #15 turnout needed; two turnouts to be retired • Culvert at 1528+00 to be extended past proposed siding
7	Mechanicville to Hoosick	• 3 new sidings totaling 5.4 miles, existing 2 sidings need no work, 50’ wide crossings assumed • $4M for updates to existing signal system, all existing Public Grade crossings will require warning system modifications • 8 new #20 turnouts needed for sidings • 800' of track needs to be realigned in order to fit #20 for station • Grade crossing at Vial Ave will be made into double track to accommodate station siding at Mechanicville • Bridge at Anthony's Kill (Bridge 186.93) requires a bridge extension/modification to facilitate second track • A high platform passenger station in Mechanicville
8	Hoosick to North Bennington	• Existing mainline is currently 100% welded rail (no rail upgrade needed), 50’ wide crossings assumed • Every 12th tie replaced, 50% of segment requires additional surfacing and aligning of curvature to meet increased speeds • All existing Public Grade crossings will require warning system modifications • 1 mile of new siding required for congestion relief • Two new #20 turnouts for new siding, existing bridge will require some work • Culvert at 3143+00 needs to be extended past proposed siding • 3100' of new siding for station at North Bennington • 1350' of realigned track needed to allow space for siding inside the ROW • Bridge costs included to rehabilitate or replace one (1) bridge identified as being in Poor condition based on inspections • Two #20 turnouts needed for station siding • Additional grade crossing for siding at Bank Street in North Bennington • A high platform station in North Bennington including the historic station building and expanded parking

Table 1: Track Improvements (Continued)

#	Segment	Proposed Infrastructure Improvements
9	North Bennington to Manchester	• Existing mainline is currently welded rail MP 2.0 - MP 13.4 • Existing mainline is currently Jointed 105# Rail MP13.4-MP16.0 & MP 19.7- MP23.0 that requires upgrades and new welded rail • Rail between MP16.0 to MP 19.7 is 115# 80’ lengths that requires welding • All existing Public Grade crossings will require warning system modifications, 50’ wide crossings assumed • Every 12th tie is replaced MP 2.0 -MP 13.4, 50% of segment requires additional surfacing and aligning of curvature to meet increased speeds • Every 3rd tie is replaced MP13.4-MP 23.0, 50% of segment requires additional surfacing and aligning of curvature to meet increased speeds • Bridge costs included to rehabilitate or replace three (3) bridges identified as being in Poor condition based on inspections • VTR will allow increased passenger service without new signal system • $1M for new siding to accommodate high level platform station at Manchester • 1350' of realigned track needed to accommodate a 425' high level platform • Relocation of private grade crossing Miles Lumber (MP 23.27) to accommodate siding
10	Manchester to Rutland	• Existing mainline needs upgrading over entire length (30.4 miles of welded rail at 750k/mile) • Shift track within railroad right-of-way in Manchester over length of 5,739’ • 50’ wide crossings assumed, all existing Public Grade crossings will require warning system modifications • Every 3rd tie is replaced, 50% of segment requires additional surfacing and aligning of curvature to meet increased speeds • Bridge costs included to rehabilitate or replace three (3) bridges identified as being in Poor condition based on inspections • VTR will allow increased passenger service without new signal system • Replace siding at MP 36.15 (601’), addition of siding for station 767’ and addition of 3,000’ siding • 2 turnouts needed for new siding, 1 turnout for replaced siding and 2 for station • Siding entrance moved back 500’ to avoid intersection at Brooklyn Road • A high level platform station in Manchester

UNIT COSTS

The basic tool for pricing alternatives is the typical or "unit" cost by system element. The first task in developing unit costs is to prepare a list of work items or "library" of cost items included it the scope of work of this project. Each unit cost includes: labor, burden, construction equipment usage, materials, permanent equipment and contractor's overhead and profit. The unit costs are then developed for each of the typical cross-sections anticipated for this project. The following elements were used to develop this estimate:

- New Mainline/
- Siding Track
- Upgrade Mainline Track
- Shift Mainline Track
- Stations
- Signal System Cost
- Grade Crossing - Public
- Grade Crossing - Private
- Grade Crossing - Warning System
- Grade Crossing Signage -All
- Undergrade Bridges
- Turnouts
- Turnouts to be Retired
- Clearing and Filling
- Culvert Extension

Table 2 provides a brief description of each system elements and unit costs.

Table 2: Unit Costs

System Element	Description	Unit Cost
New Mainline/Siding Track	New wood tie track construction, 115# CWR with new plates and resilient fasteners.	$200/TF
Upgrade Mainline Track	Spot tie replacements as required per track condition, 115# CWR with new plates and resilient fasteners.	Varies
Shift Mainline Track	Mainline track that requires realignment and shifting to meet the increased speeds and proposed alignment configurations.	$150/TF
Stations	The cost estimate for each station was developed individually to reflect the varying conditions of each station location. Stations include a high level (48") platform of 425' by 15' with stairs and an access ramp to meet ADA requirements.	Varies – See **Tables 3-5**
Signal System Cost	Cost of providing a basic signal system to support the desired passenger train speeds.	Lump Sum
Grade Crossing – Public	Installation/replacement of the track panel through the crossing and the associated typical roadway paving work.	$3,000/ TF
Grade Crossing – Private	Installation/replacement of a timber plank crossing for private use.	$5,000 EA
Grade Crossing - Warning System	Installation and upgrade of the signal system to accommodate the increased passenger train speeds.	$300,000 EA
Grade Crossing Signage - All	Installation of all required crossing warning signage.	$5,000 EA
Undergrade Bridges	Structural repairs to bridges listed as in "poor" condition required for passenger trains. All bridges not listed as "poor" we assumed to need no work.	$500,000 EA
Turnouts	Addition of new turnouts required to support operational needs.	Varies by type.
Turnouts to be retired	Removal of turnouts.	$70,000 EA
Clearing and Filling	Clearing and grubbing, required fill slopes for track alignment, potential ditching.	Lump Sum
Culvert Extension	Extension of culverts to support the additional siding tracks or relocated track alignment.	Lump Sum

Table 3 shows the total costs by major system elements and **Table 4 shows** the cost breakdown by analysis segment.

Table 3: Total Costs, by Major System Element

System Element							Total[1]
Mainline Improvements	Crossings	Stations	Bridges	Signal System	Special Trackwork	Clearing and Drainage	
$ 55,730,050	$ 23,110,000	$5,290,000	$ 4,500,000	$ 16,000,000	$6,035,000	$ 1,579,060	$ $112,244,110

1. Costs include: labor, burden, construction equipment usage, materials, station site acquisition, permanent equipment and contractor's overhead and profit. Does not include contingency allowances.

Table 4: Total, Costs, by Analysis Segment

	New Siding Track		Upgrade Mainline Track		Shift Mainline Track		Signal System	Grade Crossing - Public		Grade Crossing - Private		Grade Crossing - Warning System		Grade Crossing Signage -All		Undergrade Bridges		Turnouts/Turnout Removal		Clearing & Filling	Culvert Extension	Stations	Total[1]
	$200	TF	Varies	TF	$150	TF	LS	$3,000	TF	$5,000	EA	$150,000	EA	$5,000	LS	$500,000	EA						
	Quant	Cost	Quant.	Cost	Quant	Cost		Quant	Cost	Quant	Cost	Quant.	Cost	Quant	Cost	Quant.	Cost	Quant	Cost	Cost	Cost	Cost	
Segment 1 - CSX (Schenectady-Albany)	0	$0	0	$0	0	$0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	$0	$0	$0	**$0**
Segment 2 - CPR (CPF 480-Schenectady)	700	$140,000	0	$0	1,000	$150,000	$4,000,000	200	$600,000	0	$0	4	$600,000	4	$20,000	1	$500,000	0/2	$140,000	$0	$0	$0	**$6,150,000**
Segment 6 - CPR (Mechanicville-CPF 480)	13,200	$2,640,000	0	$0	7,000	$1,050,000	$8,000,000	400	$1,200,000	5	$25,000	8	$1,200,000	13	$65,000	0	$0	10/2	$2,370,000	$431,500	$25,000	$1,550,000	**$18,556,500**
Segment 7 - PAR (Hoosick-Mechanicville)	28,500	$5,700,000	0	$0	800	$120,000	$4,000,000	600	$1,800,000	4	$20,000	12	$1,800,000	16	$80,000	1	$500,000	8/0	$1,880,000	$877,800	$0	$0	**$16,777,800**
Segment 8 - VTR (No. Bennington-Hoosick)	8,100	$1,620,000	9,240	$554,400[1]	1,350	$202,500	$0	200	$600,000	2	$10,000	4	$600,000	6	$30,000	1	$500,000	4/0	$940,000	$219,760	$25,000	$2,290,000	**$7,591,660**
Segment 9 - VTR (Manchester-N. Bennington)	0	$0	110,880	$8,995,400[2]	1,350	$202,500	$0	1,000	$3,000,000	26	$280,000	20	$3,000,000	46	$230,000	3	$1,500,000	0	$0	$0	$0	$0	**$17,207,900**
Segment 10 - VTR (Rutland-Manchester)	4,368	$873,600	163,680	$32,620,800[3]	5,739	$860,850	$0	1,200	$3,600,000	63	$315,000	24	$3,600,000	87	$435,000	3	$1,500,000	3/0	$705,000	$0	$0	$1,450,000	**$45,960,250**

1 – Unit price = $15/TF (track foot)
2 – Unit price = $30/TF. Includes $244,000 for new welds, and $4,425,000 for 5.9 miles of welded rail.
3 – Unit price= $60/TF. Includes $22,800,000 for 30.4 miles of new welded rail.

Station Costs

New stations are proposed to be constructed in Mechanicville, North Bennington, and Manchester for both Build alternatives. All stations will be full length (425') high level platform stations to comply with ADA requirements.

The general development plan for each station calls for a Class V station that includes:

- Platform for ingress/egress access to trains;
- Parking lot with 50 spaces;
- Auto pick-up/drop-off area; and
- Sheltered Waiting Area.

Tables 5 through **7** provide a breakdown of the station cost estimates for each station location – the total station costs are included in **Tables 3** and **4**.

Table 5: Mechanicville Station Cost Estimate

Area Calculations				
Hot Mix Asphalt (driveway/parking)		25210	SF	
Cement Concrete Sidewalk		6650	SF	
Loam & Seed / Landscaping		4130	SF	
Platform (425-ft) / stairs / ramps		6375	SF	
TOTAL AREA		42030	SF	
Cost Estimate				
	Unit Costs	**Unit**	**Quantity**	**Cost**
Property Acquisition (60,000SF)	$100,000	LS	1	$100,000
Excavation (assume 1-ft cut)	$30	CY	1557	$46,710
Grading & Compacting	$5	SY	4670	$23,350
Gravel Borrow (pavement & sidewalks)	$35	CY	787	$27,545
Crushed Stone	$60	CY	311	$18,660
Hot Mix Asphalt Pavement (3.5" thick)	$120	TON	549	$65,880
Cement Concrete	$60	SY	739	$44,340
Loam Borrow (4" thick)	$50	CY	51	$2,550
Seeding	$5	SY	459	$2,295
Landscaping (12 trees & shrubs)	$8,000	LS	1	$8,000
Curbing	$40	FT	1560	$62,400
Drainage	$50,000	LS	1	$50,000
Parking Area Lighting	$50,000	LS	1	$50,000
Station Signage	$40,000	LS	1	$40,000
Highway Signage	$5,000	LS	1	$5,000
Platform				
High Level Platform	$140	SF	6375	$892,500
Platform Lighting	$75,000	LS	1	$75,000
Shelter Structure	$30,000	LS	1	$30,000
TOTAL COST				$1,544,230
TOTAL COST (rounded)				**$1,550,000**

Table 6: North Bennington Station Cost Estimate

Area Calculations		
Hot Mix Asphalt (driveway/parking)	27210	SF
Cement Concrete Sidewalk	8430	SF
Loam & Seed / Landscaping	6490	SF
Platform (425-ft) / stairs / ramps	6375	SF
TOTAL AREA	48170	SF

Cost Estimate				
	Unit Costs	**Unit**	**Quantity**	**Cost**
Property Acquisition (100,000SF)	$500,000	LS	1	$500,000
Excavation (assume 1-ft cut)	$30	CY	1784	$53,520
Grading & Compacting	$5	SY	5352	$26,760
Gravel Borrow (pavement & sidewalks)	$35	CY	880	$30,800
Crushed Stone	$60	CY	336	$20,160
Hot Mix Asphalt Pavement (3.5" thick)	$120	TON	593	$71,160
Cement Concrete	$60	SY	937	$56,200
Loam Borrow (4" thick)	$50	CY	80	$4,000
Seeding	$5	SY	721	$3,605
Landscaping (12 trees & shrubs)	$8,000	LS	1	$8,000
Curbing	$40	FT	1750	$70,000
Drainage	$50,000	LS	1	$50,000
Parking Area Lighting	$50,000	LS	1	$50,000
Station Signage	$40,000	LS	1	$40,000
Highway Signage	$5,000	LS	1	$5,000
Platform				
High Level Platform	$140	SF	6375	$892,500
Platform Lighting	$75,000	LS	1	$75,000
Shelter Structure	$30,000	LS	1	$30,000
Allowance for Historic N. Bennington Station				$300,000
TOTAL COST				$2,286,725
TOTAL COST (rounded)				**$2,290,000**

Table 7: Manchester Station Cost Estimate

Area Calculations				
Hot Mix Asphalt (driveway/parking)			26760	SF
Cement Concrete Sidewalk			5450	SF
Loam & Seed / Landscaping			3800	SF
Platform (425-ft) / stairs / ramps			6375	SF
TOTAL AREA			42050	SF
Cost Estimate				
	Unit Costs	**Unit**	**Quantity**	**Cost**
Excavation (assume 1-ft cut)	$30	CY	1557	$46,710
Grading & Compacting	$5	SY	4672	$23,360
Gravel Borrow (pavement & sidewalks)	$35	CY	795	$27,825
Crushed Stone	$60	CY	330	$19,800
Hot Mix Asphalt Pavement (3.5" thick)	$120	TON	583	$69,960
Cement Concrete	$60	SY	606	$36,360
Loam Borrow (4" thick)	$50	CY	47	$2,350
Seeding	$5	SY	422	$2,110
Landscaping (12 trees & shrubs)	$8,000	LS	1	$8,000
Curbing	$40	FT	1650	$66,000
Drainage	$50,000	LS	1	$50,000
Parking Area Lighting	$50,000	LS	1	$50,000
Station Signage	$40,000	LS	1	$40,000
Highway Signage	$5,000	LS	1	$5,000
Platform				
High Level Platform	$140	SF	6375	$892,500
Platform Lighting	$75,000	LS	1	$75,000
Shelter Structure	$30,000	LS	1	$30,000
TOTAL COST				$1,444,975
TOTAL COST (rounded)				**$1,450,000**

B-3

Attachment 1

Technical Memorandum – Station Siting

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Memorandum

To: Costa Pappis, VTRANS

Date: October 4, 2012

Project No.: 11518.00

From: VHB

Re: NY-VT New Station Locations

The purpose of this memorandum is to present the results of the station siting analysis completed for the NY-VT Intercity Passenger Rail Study.

Three new stations are proposed in conjunction with both Build alternatives, in the following locations:

1) Mechanicville, NY
2) North Bennington, VT
3) Manchester, VT

Each of the three stations would serve passengers using the service that travels between Albany, NY and Rutland, VT via the "Western Corridor.

The general development plan for each station calls for a Class V station that will include:

- Platform for ingress/egress access to trains;
- Parking lot with 50 spaces;
- Auto pick-up/drop-off area; and
- Sheltered Waiting Area.

Factors considered during the station siting included:

- Proximity to town centers;
- Passenger/vehicular access to and from the site;
- Potential environmental restrictions;
- Presence of sufficient tangent track to accommodate trains (both passenger and freight); and
- Availability of land/need to purchase property.

Under Title II of the Americans with Disabilities Act (ADA) intercity rail systems which are owned or operated by public entities must be made readily accessible to and useable by individuals with disabilities, including those who use wheelchairs. With respect to public entities, Title II requires that rail cars be coordinated with boarding platforms to provide level boarding for all train cars. The term "level boarding" means direct access between the platform and any car of the train without any change in level.

Level boarding is identified as the best means of providing accessibility and benefits to all passengers, and has been deemed to be operationally superior to deploying boarding devices such as lifts, ramps or bridge plates. Current legislation recommends full length platforms over mini-high platforms because mini-high platforms can accommodate only a limited number of passengers, can serve only

one car at a time, and may restrict normal passenger flow. New or modified stations must be designed and constructed such that level boarding is feasible from the platforms; this generally means that high level platforms are required. Additionally, the length of tangent track (or nearly tangent track – degree of curvature must be 2 degrees or less) adjacent to the platform must be sufficient to allow the passenger trains to enter the station area (without clipping the edge of the platform) and be parallel to the platform in order to allow ingress and egress from the train.

There are currently freight operations on all sections of track associated with proposed route from Albany to Rutland (via the Western Corridor of Vermont). Because freight vehicles have larger clearance requirements than passenger trains, with respect to platform setbacks from the track, either gauntlet tracks (which place a set of tracks straddling one of the mainline tracks) or a siding may be needed in some locations to achieve the required offset from the mainline. Freight operators in the Study Area have indicated they want to preserve the ability to run wide loads, so the gauntlet track or sidings provide a way to shift the wide load trains away from the platform edge.

Graphics are attached that summarize the sites that were identified and analyzed in conjunction with each of the stations. For each station, there is a summary graphic showing each of the alternative station locations that include brief notes regarding the benefits or disadvantages of each site; example site layouts (in each of the town center site alternatives) are also attached.

Station Costs

A number of variations have been analyzed at each station and cost estimates prepared for each variation:

- Both high level (to conform with ADA level boarding requirements) and low level platform[1] stations have been analyzed for each station location;
- Platform length was also analyzed as a variable – 340-foot platforms (to accommodate 4-car trains) and 425-foot platforms (to accommodate 5-car trains).

Table 1 summarizes the station cost estimates for each variation at each station location.

Table 1 – Station Cost Estimates

Station	Cost Estimate			
	Low Level Platform (340')	High Level Platform (340')	Low Level Platform (425')	High Level Platform (425')
Mechanicville	$860,000	$1,260,000	$930,000	$1,400,000
North Bennington	$890,000	$1,290,000	$970,000	$1,440,000
Manchester	$860,000	$1,260,000	$930,000	$1,400,000
TOTAL	$2,610,000	$3,810,000	$2,830,000	$4,240,000

Note: A 340-foot can accommodate 4-car train; a 425-foot platform can accommodate a 5-car train.

[1] The state may pursue a waiver from level boarding requirements (though the forecasted ridership at the proposed new stations indicates they will surpass the threshold over which high platforms are required) and pursue low platform stations; therefore estimated capital costs were prepared for both low and high platform stations.

NY-VT Rail Study

Mechanicville Station Location Alternatives

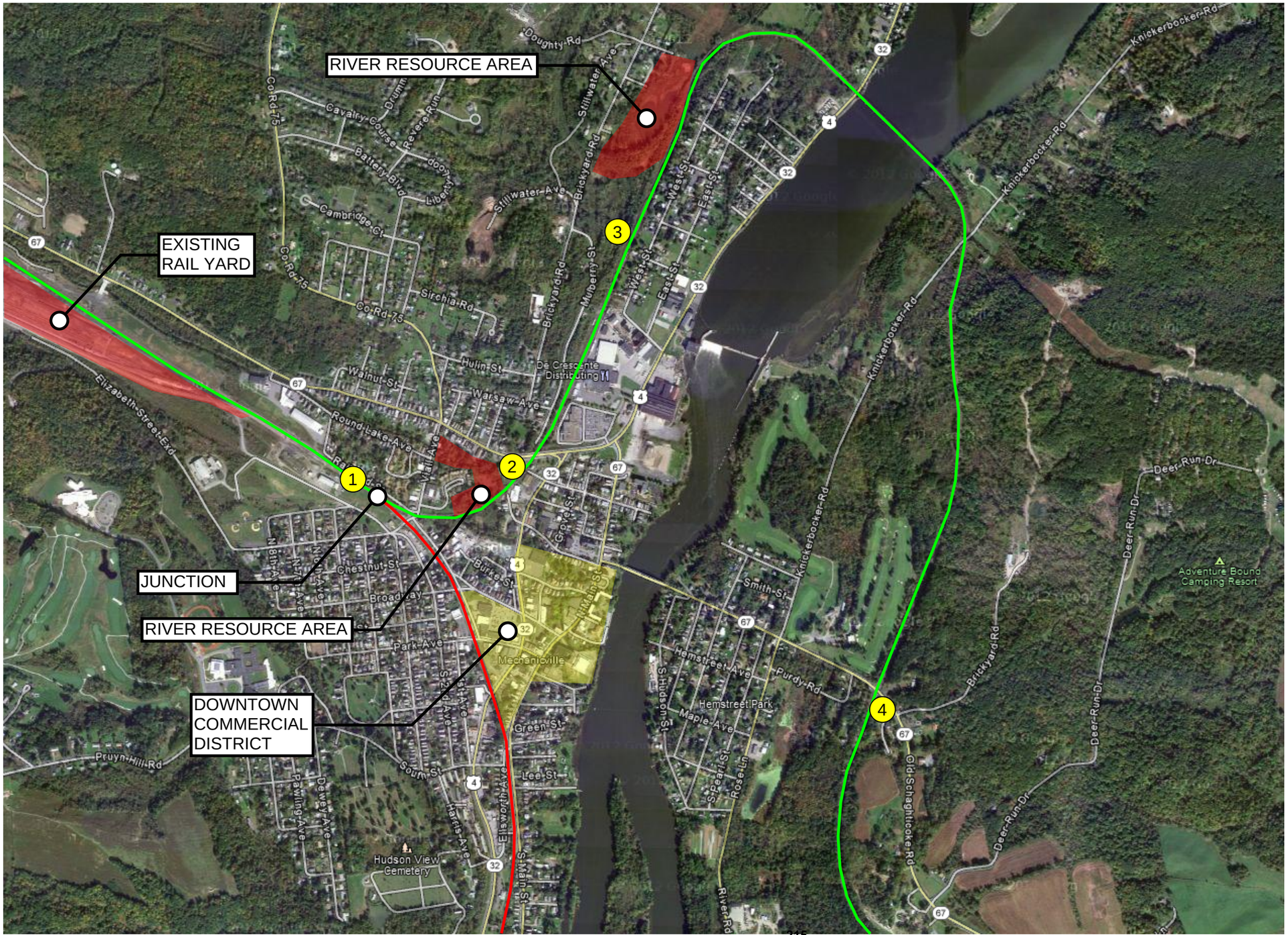


Image Source: Google Maps

Mechanicville Station

Mechanicville, NY

Class V Station
425' High-Level Platform
Sheltered Waiting Area
50 Parking Spaces
Auto pick-up/Drop-off
Station/Highway Signage

Key:

1. -Historic station site.
   -Location between rail yard and junction risks operational problems.

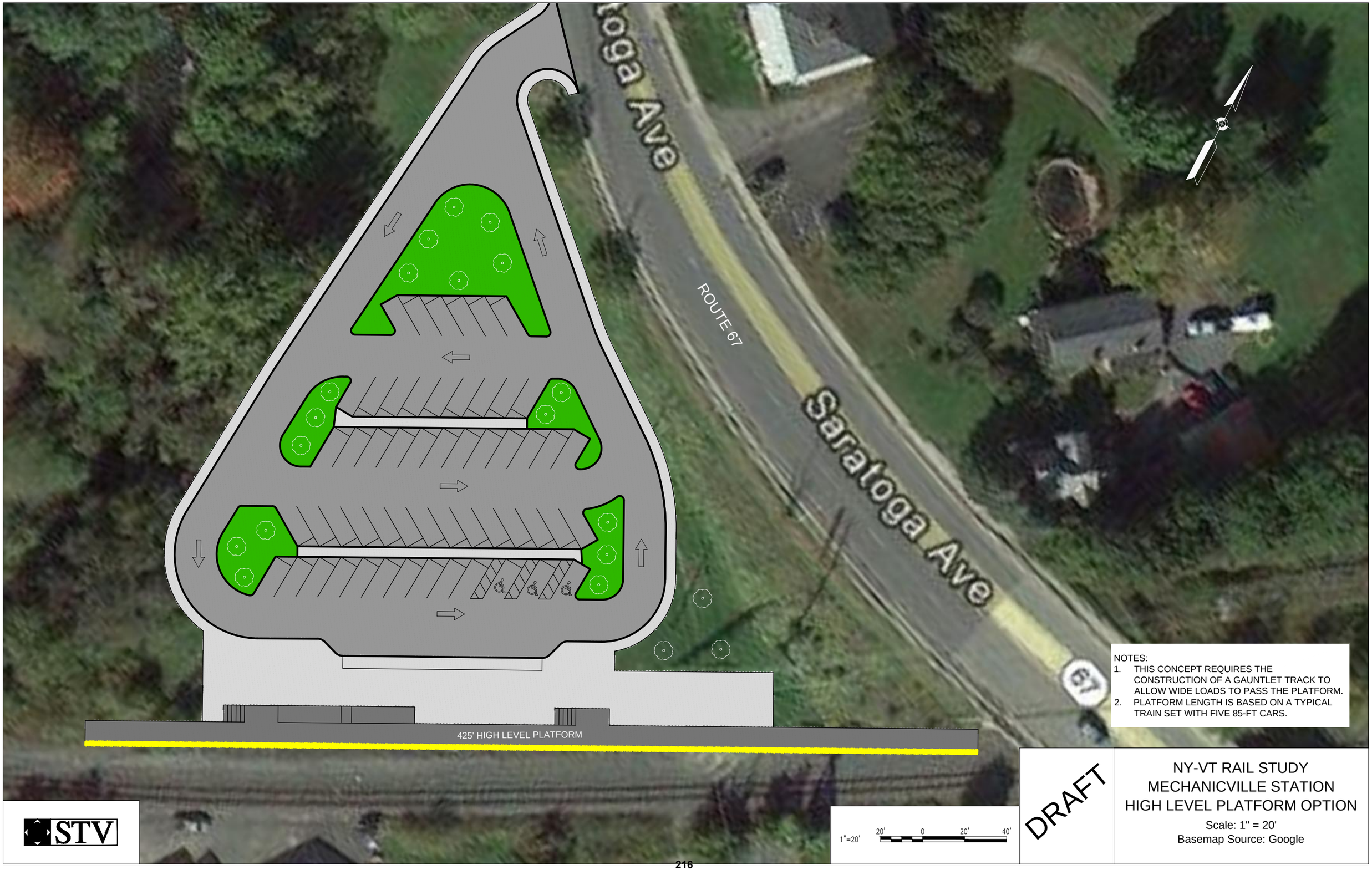
2. -Excellent access to downtown via Route 67
   -Requires track realignment to accommodate high-level platform
   -Possible environmental constraints.

3. -Tangent track accommodates high-level platform.
   -Poor roadway access.
   -Residential land use.
   -Possible environmental constraints.

4. -Excellent access to downtown via Route 67.
   -Tangent track accommodates high-level platform
   -Room for parking.

Legend:

- NY-VT Rail Route
- Other Rail Lines
- 1 Investigated Station Location



NOTES:
1. THIS CONCEPT REQUIRES THE CONSTRUCTION OF A GAUNTLET TRACK TO ALLOW WIDE LOADS TO PASS THE PLATFORM.
2. PLATFORM LENGTH IS BASED ON A TYPICAL TRAIN SET WITH FIVE 85-FT CARS.

STV

1"=20' 20' 0 20' 40'

DRAFT

NY-VT RAIL STUDY
MECHANICVILLE STATION
HIGH LEVEL PLATFORM OPTION

Scale: 1" = 20'
Basemap Source: Google

NY-VT Rail Study

North Bennington Station Location Alternatives

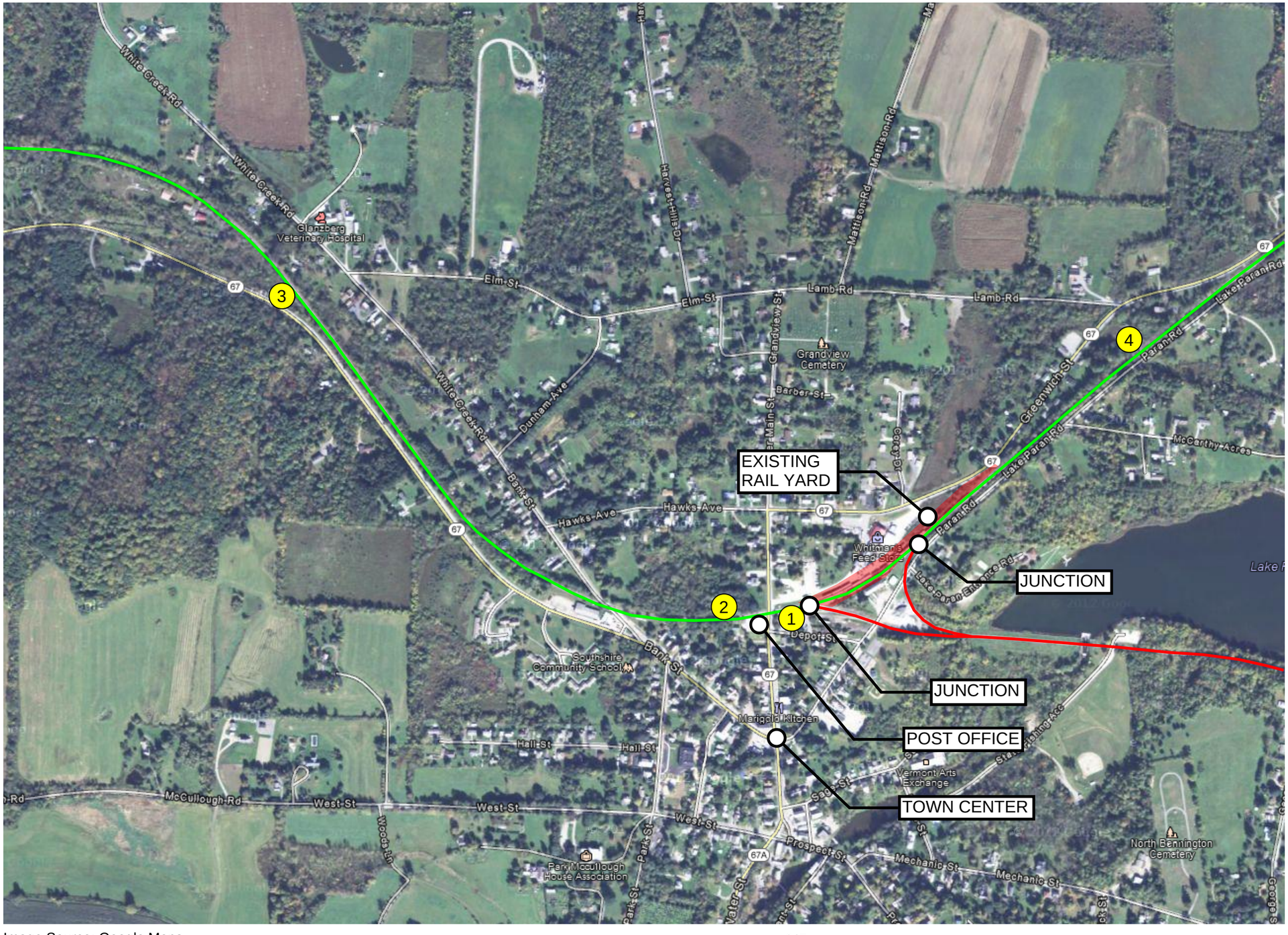


Image Source: Google Maps

North Bennington Station

North Bennington, VT

Class V Station
425' High-Level Platform
Sheltered Waiting Area
50 Parking Spaces
Auto pick-up/Drop-off
Station/Highway Signage

Key:

1 -Historic station location.
-Currently occupied.
-Location at junction and rail yard poses operational problems.
-Insufficient room for platform.
-Curved track precludes high-level platform.

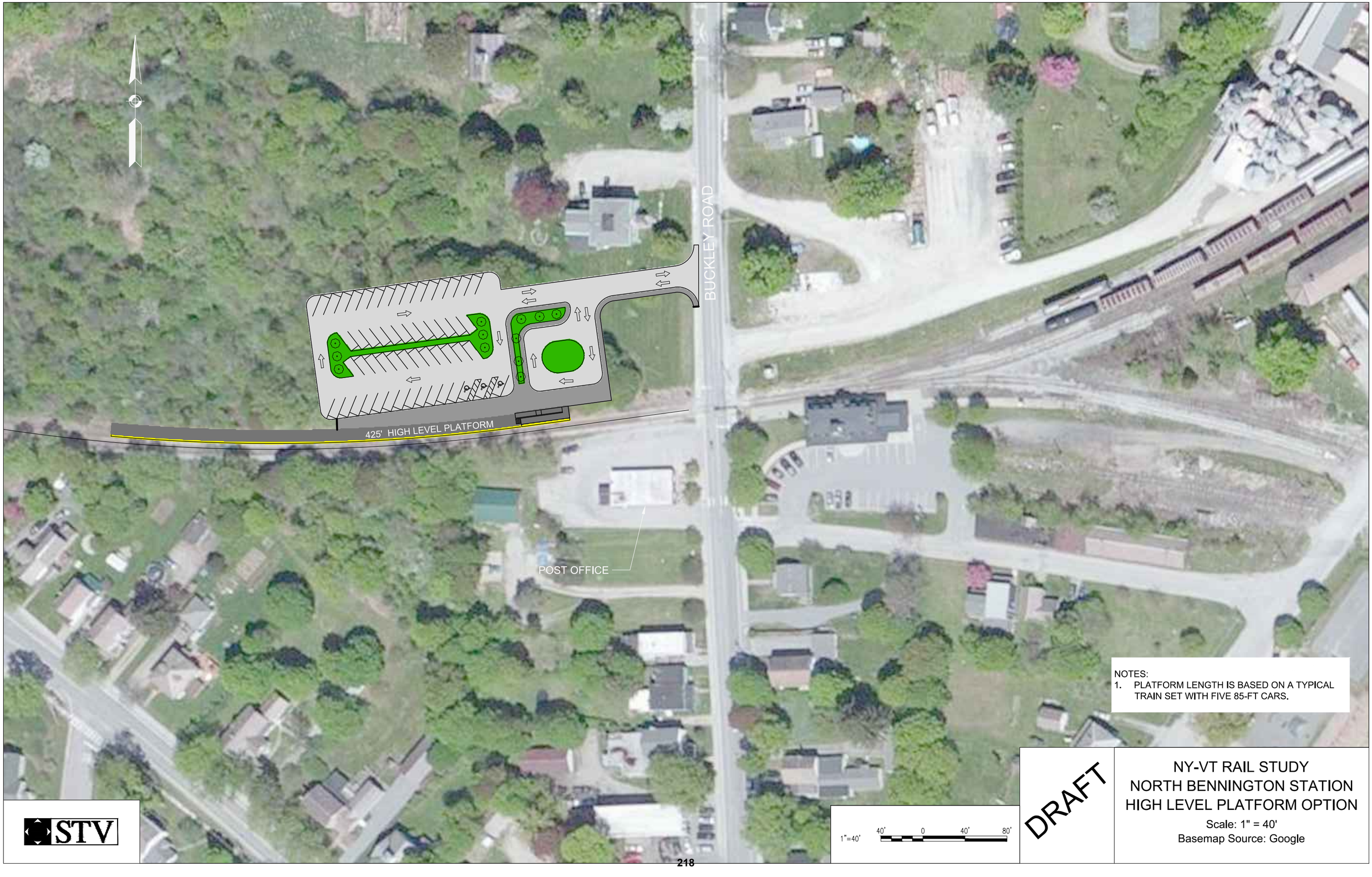
2 -Adjacent to historic station and town center.
-Track realignment, land takings, and grade crossing reconstruction required to accommodate high-level platform.
-Parking lot to be located across tracks at post office.

3 -Tangent track alignment accommodates high-level platform.
-Good vehicular access.
-Room for parking adjacent to platform.

4 -Equivalent to site 3 but in a residential area with less direct site access.

Legend:

- NY-VT Rail Route
- Other Rail Lines
- 1 Investigated Station Location



NOTES:
1. PLATFORM LENGTH IS BASED ON A TYPICAL TRAIN SET WITH FIVE 85-FT CARS.

STV

1"=40' 40' 0 40' 80'

DRAFT

NY-VT RAIL STUDY
NORTH BENNINGTON STATION
HIGH LEVEL PLATFORM OPTION
Scale: 1" = 40'
Basemap Source: Google

NY-VT Rail Study

Manchester Station Location Alternatives

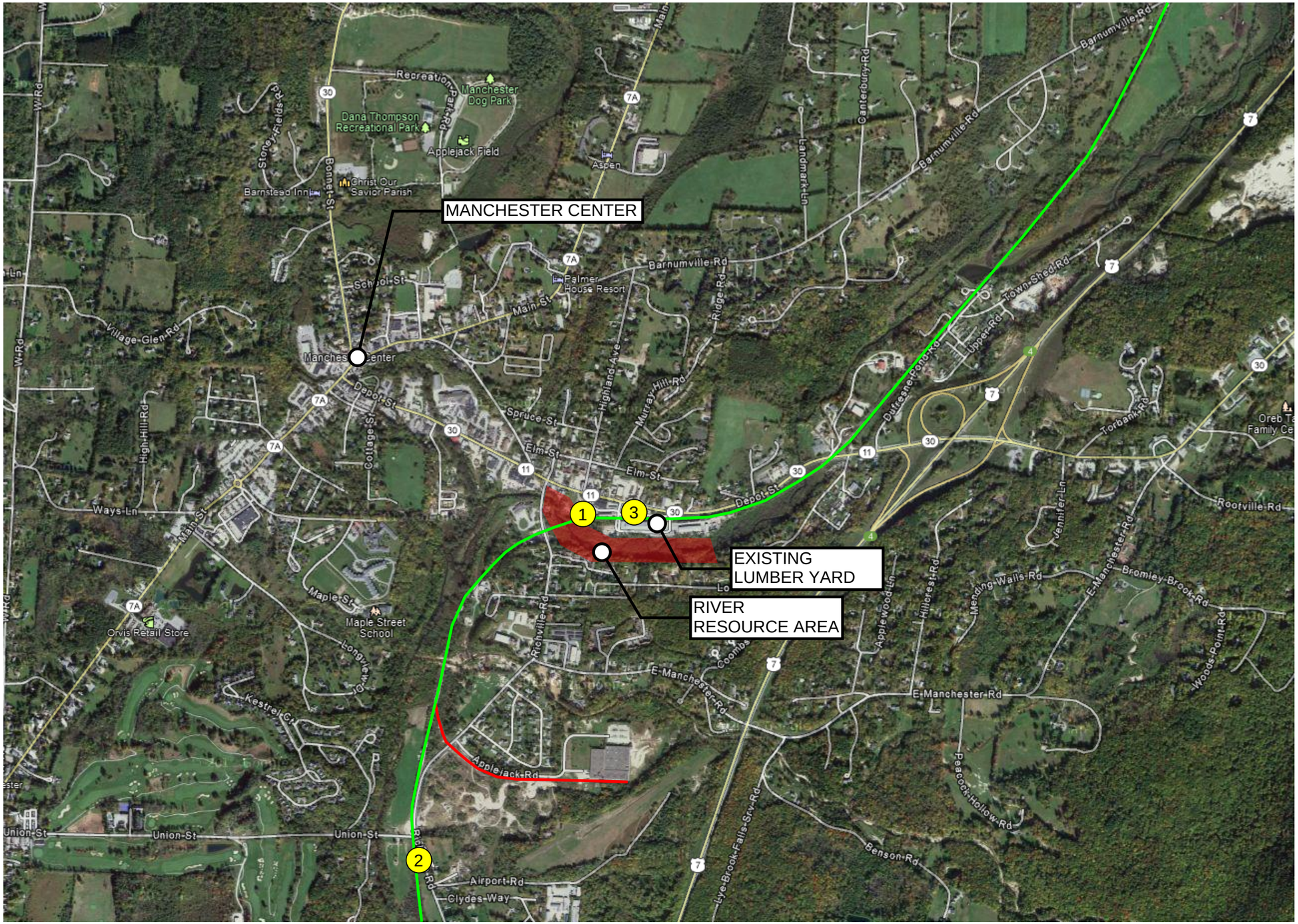


Image Source: Google Maps

Manchester Station

Manchester, VT

Class V Station
425' High-Level Platform
Sheltered Waiting Area
50 Parking Spaces
Auto pick-up/Drop-off
Station/Highway Signage

Key:

1 -Historic station location.
-Curved track precludes high-level platform.
-Potential environmental restrictions

2 -Tangent track accommodates high-level platform.
-Direct vehicular access.
-Adequate room for parking
-Does not displace existing buildings.

3 -Tangent track alignment accommodates high-level platform.
-Central location in Manchester.
-Excellent site access.
-Requires acquisition of buildings.
-Eliminates rail siding

Legend:

- NY-VT Rail Route
- Other Rail Lines
- 1 Investigated Station Location

NOTE:
1. PLATFORM LENGTH IS BASED ON A TYPICAL TRAIN SET WITH FIVE 85-FT CARS.

1"=20' 20' 0 20' 40'

DRAFT

NY-VT RAIL STUDY
MANCHESTER STATION
HIGH LEVEL PLATFORM OPTION

Scale: 1" = 20'

Basemap Source: Google

STV

C

Simulation Model Summary

Transportation
Land Development
Environmental
Services

Vanasse Hangen Brustlin, Inc.

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Boston, Massachusetts 02110
Telephone 617 728-7777
FAX 617 728-7782
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Memorandum

To: Costa Pappas

Date: September 19, 2012

Project No.: 11518.00

From: Mike Lambert
Anthony Waller
Josh Bendyk

Re: Summary of Simulation Assumptions and TPC Results

This memo summarizes the information used and assumptions made to build the Rail Traffic Controller™ (RTC) model for the NY-VT Bi-State Intercity Passenger Rail Study.

The infrastructure used in the model was prepared conceptually by the VHB team specifically to run the software model's Train Performance Calculator (TPC). The TPC runs are single train simulations without conflicts based on the route and stopping pattern input for each train. In the simulation model, TPC runs were completed for one northbound and a southbound train between Alb any and Rutland along the proposed route.

The preferred route, modeled in RTC, is from Albany/ Rensselaer NY to Rutland VT; containing four segments each owned by a different railroad. The model includes proposed improvements along each segment of the corridor. The following paragraphs summarize the information and assumptions used to build each railroad segment of the model's database.

CSX (With Amtrak as Lessor) – Albany/Rensselaer to Schenectady

In the RTC model, this segment was coded based on the infrastructure proposed for two committed, Amtrak-managed capital projects: the Albany/ Rensselaer Station 4th Track Project (including an additional high-level platform at that location) and the Albany–Schenectady Double Track Project (including upgraded speeds). Plans prepared by the VHB team included all the information needed for track and signal infrastructure locations, switch and crossover information, speeds, grades, and signal aspects.

CP – Schenectady to Mechanicville

In the RTC model, this segment was coded based on track charts of the Freight Main Subdivision provided by CP. The track charts included the track and signal infrastructure, speed, and grade information. However, they did not include stationing for the infrastructure locations or changes in speed or grade. For the model, as directed by CP, these locations were estimated based on the mileposts on the track chart and measurements in Google Earth.

The track charts also did not include information on switches or crossovers. As directed by CP, for the purposes of the RTC model switch numbers and types were assumed to be the following:

- Main line switches were set as #15 dual control power switches,

- Turnout switches for industrial tracks or yard leads off a main track were set as #10 manual switches with electric locks, and
- Switches for yard tracks were set as #10 manual switches without locks.

No signal aspects were provided for this segment of track. As directed by CP, signal aspects and the trailing signal settings were generated and assumed for the purposes of the RTC Model. The aspects were based on the signal aspect definitions included in the CP timetable, as well as track speed and geometry. Tables (Attachment 2) developed by the VHB team included stationing for curves with recommendations for track speeds at those points. These speeds were input to the model at the appropriate locations. A Maximum Authorized Speed (MAS) of 70 mph was assumed on straight track segments between speed restrictions throughout this segment.

CP has also provided a schematic of the newly installed Mechanicville Yard track infrastructure. This schematic provides the interlocking switch and crossover numbers, but does not include stationed locations of the interlocking track infrastructure or signal infrastructure information. For the model, as directed by CP, these locations were estimated based on the mileposts on the track chart and measurements in Google Earth.

The model also includes proposed changes to the infrastructure derived from track drawings developed by the VHB team as part of this project. These changes involve enhancements to the interlockings that are northeast of Mohawk Yard, namely CP477 and CP478. This involves the installation of additional crossovers, the relocation of other crossovers, and the removal of certain track segments affected by this work. The effect of the new alignment of the infrastructure results in greater capability for parallel moves.

Pan Am – Mechanicville to Hoosick Jct.

In the RTC model, this segment was built based on the track charts of the Freight Main Line provided by Pan Am. The track charts included the track and signal infrastructure, speed, and grade information; however they did not include stationing for the infrastructure locations or changes in speed or grade. For the model, these locations were estimated based on the mileposts on the track charts and measurements in Google Earth.

The track charts also did not include information on switches or crossovers. For the purposes of the RTC model switch numbers and types were assumed to be the following:

- Main line switches were set as #15 dual control power switches,
- Turnout switches for industrial tracks or yard leads off a main track were set as #10 manual switches with electric locks, and
- Switches for yard tracks were set as #10 manual switches without locks.

No signal aspects were provided for this segment of track. Signal aspects and the trailing signal settings were assumed for the purposes of the RTC Model. The aspects were based on the signal aspect definitions included in the Pan Am timetable, as well as track speed and geometry. Tables (Attachment 2) developed by the VHB team included stationing for curves with recommendations for track speeds at those points. These speeds were input to the model at the appropriate locations. An MAS of 60 mph was assumed on straight track segments between speed restrictions throughout this segment.

The model also includes proposed changes to the infrastructure derived from track drawings developed by the VHB team, including the following three proposed control sidings.

- A 8,000 foot siding located approximately 1.5 miles east of CP478,
- a 8,000 foot siding located approximately 4 miles east of Mechanicville, and
- a 10,000 foot siding located approximately 1.5 miles west of Hoosick Junction (CPF448).

The RTC model does not include the track and infrastructure changes being constructed as part of one committed project, the joint Pan Am/ Norfolk Southern Intermodal Yard in Halfmoon/ Mechanicville.

VRS – Hoosick Jct. to Rutland

This segment of the model was built based on the track charts of the Hoosick Main and B&R Main provided by VRS. The track charts included the track infrastructure and speeds; however they did not include stationing for the track infrastructure locations, or changes in speed. For the model, these locations were estimated based on the mileposts on the track chart.

The track charts also did not include information on switches or crossovers. For the purposes of the RTC model switch numbers and types were assumed to be the following.

- Main line switches were set as #10 dual control power switches,
- Turnout switches for industrial tracks or yard leads off a main track were set as #10 manual switches with electric locks, and
- Switches for yard tracks were set as #10 manual switches without locks.

The track charts provided included grade information which was input into the model accordingly. Signal information was not provided on track charts or aspect charts; however this information is not necessary for the TPC runs.

Tables (Attachment 2) developed by the VHB team include stationing for curves with recommendations for track speeds at those points. These speeds were input to the model at the appropriate locations. All straight track segments were assumed to be upgraded to an MAS of 60 mph.

The model also includes proposed changes to the infrastructure derived from track drawings developed by the VHB team, including the following proposed control sidings.

- a 4,000 foot siding roughly three miles west of North Bennington, and
- a 3,500 foot-siding roughly 13.5 miles north of Manchester and 18 miles south of Rutland. The above siding represents a lengthening and relocation of an existing siding with hand-throw switches.

TPC Inputs and Results

TPC runs were performed in each direction on the study corridor between Albany and Rutland. The train set used included one P42-DC locomotive pulling five coach cars. Table 1 compares run times between the existing Amtrak Ethan Allen Express service between Albany and Rutland and the proposed service.

Table 1

Proposed Service		Existing Amtrak Ethan Allen Express Service	
NB Station Stops	Proposed NB Service	NB Existing Station Stops	Existing NB Service
Albany	0:00	Albany	0:00
Schenectady	0:18	Schenectady	0:24
Mechanicville	0:55	Saratoga Springs	0:52
North Bennington	1:32	Fort Edward-Glens Falls	1:13
Manchester	1:58	Castleton	2:18
Rutland	2:39	Rutland	3:05
SB Station Stops	Proposed SB Service	SB Existing Station Stops	Existing SB Service
Rutland	0:00	Rutland	0:00
Manchester	0:42	Castleton	0:27
North Bennington	1:09	Fort Edward-Glens Falls	1:43
Mechanicville	1:46	Saratoga Springs	2:12
Schenectady	2:26	Schenectady	2:43
Albany	2:49	Albany	3:05

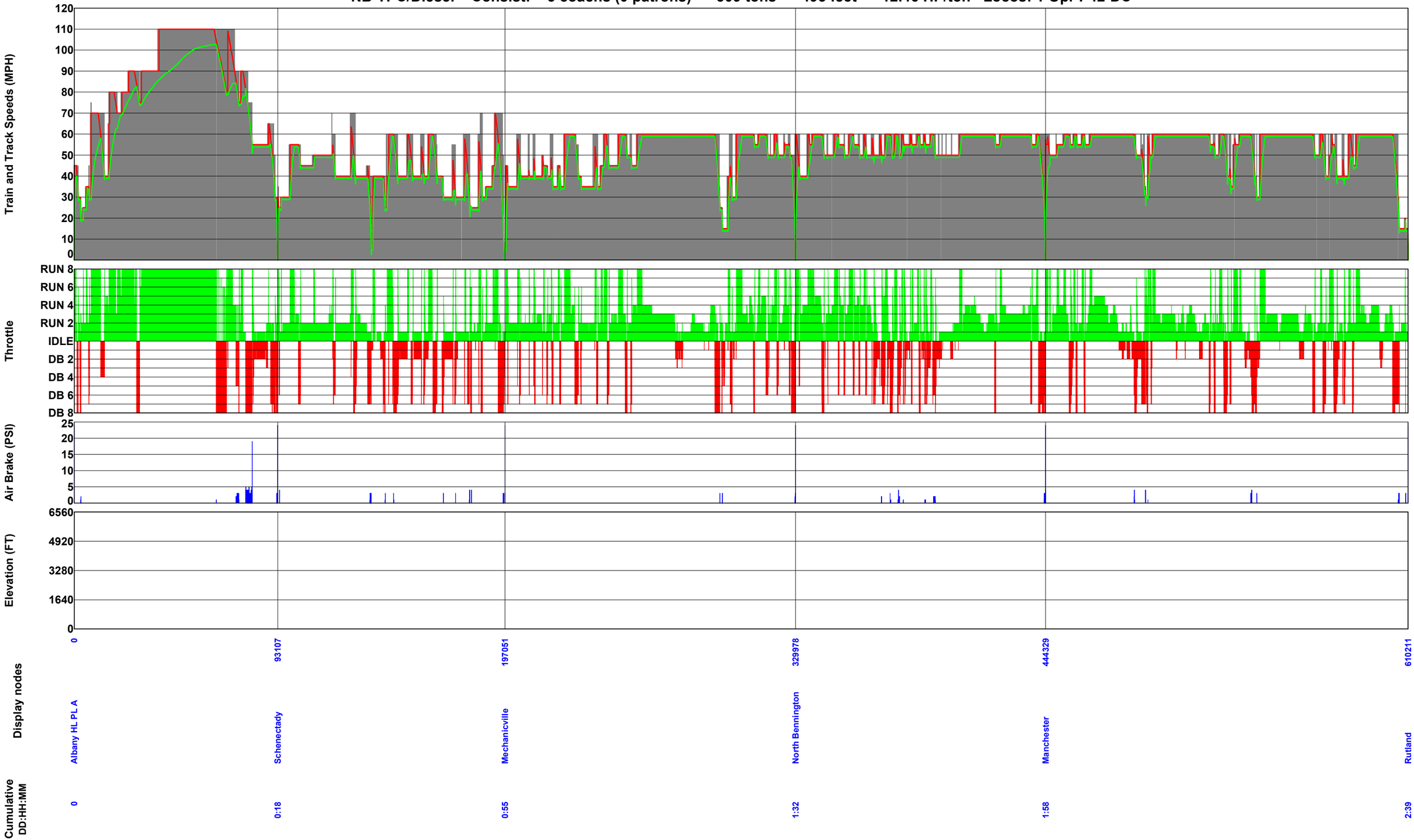
The TPC graphs (Attachment 1) also show the results for the northbound and southbound train runs in detail including the speed of the train, the tractive effort and braking, station stops and cumulative travel times.

The TPC runs themselves show the effects of the physical geographic features and the positive influence of capital projects on the different corridor segments. Between Albany and Schenectady, the southbound TPC run had a much faster run time than the northbound TPC run. This is due to the long segments of increasing elevation departing Albany to Schenectady.

On the VRS segment, proposed upgrades to the railroad track infrastructure to attain a 60 mph MAS along the straight segments, result in run times over the line segment that are superior to the schedules when the line last saw passenger service in the early 1950s. At that time, scheduled train run times between Rutland and North Bennington were 82 minutes southbound and in 73 minutes northbound.

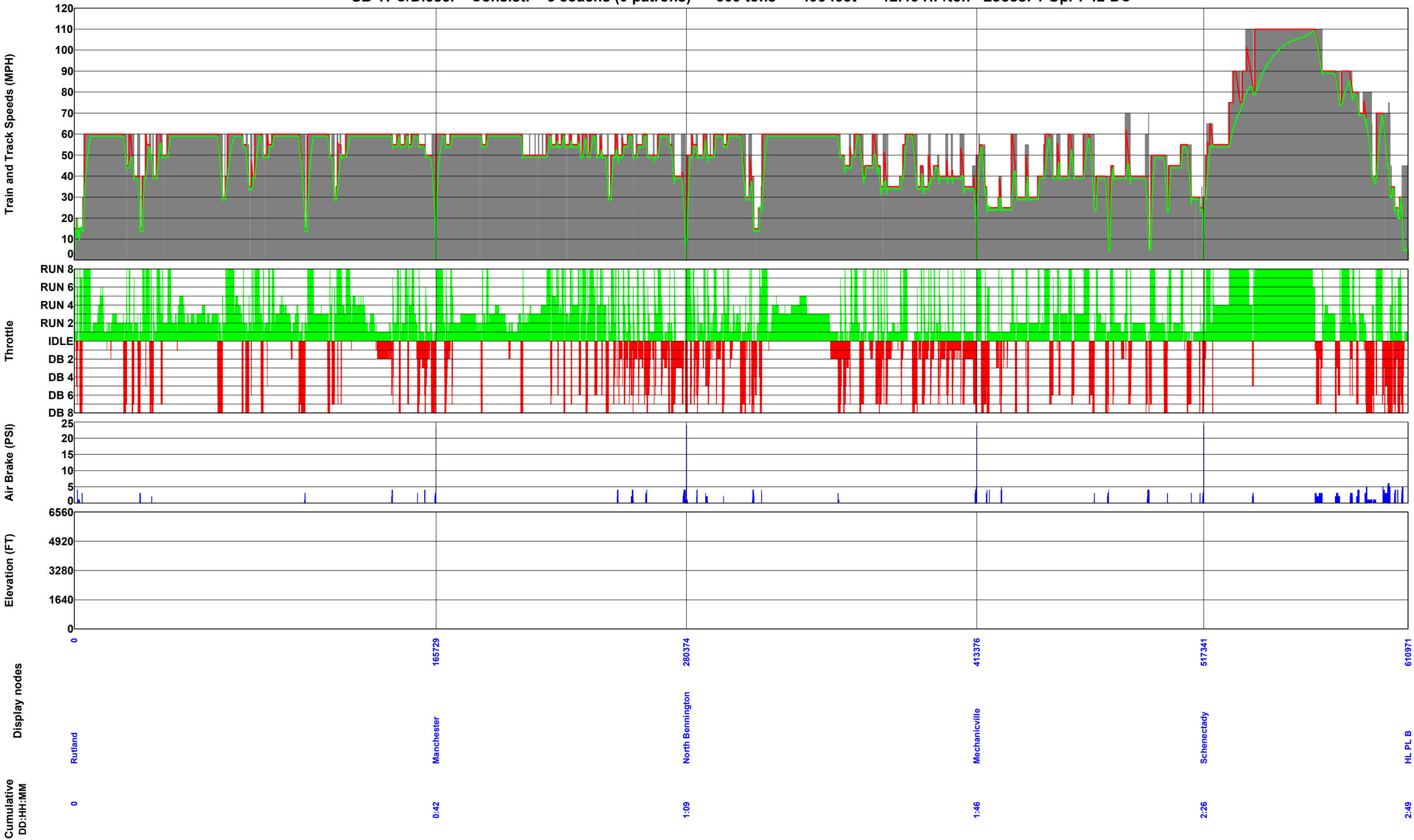
NY/VT Bi-State Intercity Passenger Rail Study

NB-TPC/Diesel Consist: 5 coachs (0 patrons) 309 tons 495 feet 12.46 HP/ton Locos: 1 Opr P42-DC



NY/VT Bi-State Intercity Passenger Rail Study

SB-TPC/Diesel Consist: 5 coachs (0 patrons) 309 tons 495 feet 12.46 HP/ton Locos: 1 Opr P42-DC



CSX ML

Curve Number		Stationing Start/End	Passenger Speed	Freight Speed	E_a	Degree (decimal)	Degree (minutes)
Albany Station		10+00					
1.001	TS	46+71.79	20	20	0.50	6.700	6° 42' 00"
	ST	59+79.87					
1.002	TS	71+66.24	25	25	2.00	5.000	5° 00' 00"
	ST	75+51.42					
1.003	TS	77+67.88	25	25	2.00	6.750	6° 45' 00"
	ST	88+13.31					
1.004	TS	100+44.47	30	25	1.50	5.458	5° 27' 30"
	ST	112+84.58					
1.005	TS	120+36.01	40	25	0.50	2.750	2° 45' 00"
	ST	127+58.64					
1.006	TS	136+09.21	35	25	0.50	3.408	3° 24' 30"
	ST	154+57.35					
1.007	TS	155+69.15	30	25	1.50	5.850	5° 51' 00"
	ST	164+30.76					
1.008	TS	171+13.34	40	25	0.50	1.000	1° 00' 00"
	ST	182+59.61					
1.009	TS	184+95.18	75	50	1.75	1.192	1° 11' 30"
	ST	198+51.56					
1.010	TS	246+49.15	65	50	2.75	1.908	1° 54' 30"
	ST	260+01.79					
1.011	TS	317+68.21	70	50	2.50	1.508	1° 30' 30"
	ST	334+64.93					
1.012	TS	353+07.01	75	50	1.25	1.025	1° 01' 30"
	ST	370+44.33					
1.013	TS	686+08.33	80	50	0.50	0.183	0° 11' 00"
	ST	691+60.36					
Crossover	PS	768+37.88	45	45	0		
	PI	768+96.12					
	PI	771+96.31					
	PS	772+54.55					
1.1.014	TS	773+72.52	75	30	0.50	0.879	0° 52' 45"
	ST	803+42.01					
1.1.015	TS	851+38.40	45	30	1.75	2.933	2° 56' 00"
	ST	888+52.60					
1.1.016	TS	892+86.18	55	30	0.50	1.583	1° 35' 00"
	ST	903+20.63					
1.1.017	TS	916+37.42	40	30	2.00	3.617	3° 37' 00"
	ST	927+57.29					
1.1.018	TS	939+62.00	30	30	1.00	3.371	3° 22' 15"
	ST	948+14.58					

Freight ML CP

Schenectady Station		949+00					
1.1.019	TS	949+56.49	35	25	0.50	1.783	1° 47' 00"
	ST	953+88.26					
1.1.020	TS	954+29.24	25	20	0.50	5.733	5° 44' 00"
	ST	960+86.55					
Existing Turnout	LLT	961+19.30					
	PI	962+79.96					
	PS	963+38.20					
1.1.021	TS	965+31.77	30	30	3.00	6.667	6° 40' 00"
	ST	971+92.90					
1.1.022	TS	974+66.23	30	30	2.25	5.358	5° 21' 30"
	ST	982+08.05					
1.1.023	TS	983+65.79	30	30	0.50	2.729	2° 43' 45"
	ST	991+20.92					
1.1.024	TS	994+24.59	30	30	1.00	3.250	3° 15' 00"
	ST	1003+73.07					
1.1.025	TS	1008+22.28	30	30	0.25	1.908	1° 54' 30"
	ST	1014+97.99					
1.1.026	TS	1020+49.99	30	30	3.75	7.700	7° 42' 00"
	ST	1032+52.86					
1.1.027	TS	1036+78.43	45	30	1.50	2.925	2° 55' 30"
	ST	1067+93.78					
Existing Crossover	PS	1068+95.58	45	45	0		
	PI	1069+53.83					
	PI	1072+54.02					
	PS	1073+12.26					
1.1.028	TS	1116+89.23	50	30	0.25	0.875	0° 52' 30"
	ST	1157+08.02					
1.1.029	TS	1174+14.93	50	30	0.50	1.100	1° 06' 00"
	ST	1188+01.97					
3.1.001	TS	1200+18.04	40	30	1.25	5.750	5° 45' 00"
	ST	1203+44.39					
3.1.002	TS	1204+46.29	40	35	1.75	3.500	3° 30' 00"
	ST	1216+85.63					
3.1.003	TS	1225+24.06	40	40	0.75	1.592	1° 35' 30"
	ST	1262+63.21					
3.1.004	TS	1287+31.40	40	40	2.75	3.550	3° 33' 00"
	ST	1316+04.03					
3.1.005	TS	1323+50.70	40	40	2.75	4.000	4° 00' 00"
	ST	1338+09.51					
Proposed #20 Crossover	PS	1338+80.88	45	45	Connection to Canadian ML CP		
	PI	1339+39.12					
	PI	1342+39.31					
	PS	1342+97.55					

Freight ML CP

Proposed #15 Crossover	PS	1343+62.55	30	30	Begin 3rd Track/B&R Connection		
	PI	1344+00.50					
	PI	1346+25.75					
	PS	1346+63.69					
Proposed #15 Turnout	LLT	1361+65.93	30	30	End 3rd Track		
	PI	1362+87.26					
	PS	1363+25.20					
Proposed #20 Crossover	POS	1363+90.20	45	45			
	PI	1364+48.45					
	PI	1367+48.26					
	POS	1368+06.50					
3.1.006	TS	1368+75.04	40	40	0.75	1.592	1° 35' 30"
	ST	1388+50.83					
3.1.007	TS	1420+40.21	40	40	0.25	1.150	1° 09' 00"
	ST	1431+60.46					
Existing Turnout	LLT	1448+62.02	End Existing Siding				
	PI	1450+22.21					
	PS	1450+80.46					
3.1.008	TS	1445+87.83	40	40	1.00	1.908	1° 54' 30"
	ST	1448+56.28					
Proposed #20 Turnout	PS	1474+92.12	45	45	Begin Proposed Siding		
	PI	1475+50.37					
	LLT	1477+11.04					
3.1.009	TS	1495+84.48	40	40	0.50	1.433	1° 26' 00"
	ST	1515+88.42					
3.1.010	TS	1525+27.41	40	40	1.00	2.000	2° 00' 00"
	ST	1535+42.05					
Proposed #20 Turnout	LLT	1560+73.74	45	45	End Proposed Siding		
	PI	1562+34.41					
	PS	1562+92.66					
3.1.011	TS	1589+12.31	40	40	3.50	4.092	4° 05' 30"
	ST	1597+36.97					
3.1.012	TS	1614+93.22	40	40	3.00	3.771	3° 46' 15"
	ST	1629+67.78					
3.1.013	TS	1674+06.23	40	40	1.00	2.000	2° 00' 00"
	ST	1685+33.12					
3.1.014	TS	1692+98.87	40	40	1.00	2.000	2° 00' 00"
	ST	1701+83.67					
3.1.015	TS	1703+34.97	40	40	1.00	1.500	1° 30' 00"
	ST	1710+50.16					
3.1.016	TS	1711+67.10	30	40	2.25	3.833	3° 50' 00"
	ST	1719+78.49					
3.1.017	TS	1723+08.02	30	30	1.75	4.408	4° 24' 30"
	ST	1735+77.44					
3.1.018	TS	1738+82.26	30	30	0.50	1.592	1° 35' 30"
	ST	1751+34.73					

	3.1.019	TS	1769+39.43	30	30	0.75	2.867	2° 52' 00"
		ST	1778+11.29					
	3.1.020	TS	1791+08.66	30	30	0.75	2.867	2° 52' 00"
		ST	1799+05.58					
	3.1.021	TS	1800+06.30	30	30	1.25	3.833	3° 50' 00"
		ST	1804+88.84					
	3.1.022	TS	1833+66.84	25	10	0.50	1.433	1° 26' 00"
		ST	1838+04.43					
PAN-AM	3.1.023	TS	1838+76.89	25	20	0.50	1.500	1° 30' 00"
		ST	1845+12.50					
	3.1.024	TS	1847+48.29	25	20	0.50	1.000	1° 00' 00"
		ST	1850+68.18					
	3.1.025	TS	1852+01.05	25	20	0.50	1.000	1° 00' 00"
		ST	1854+73.71					
	3.1.026	TS	1858+00.19	25	10	1.00	7.400	7° 24' 00"
		ST	1862+51.03					
	3.1.027	TS	1863+31.04	25	10	0.75	5.500	5° 30' 00"
		ST	1875+63.44					
	3.1.028	TS	1878+81.20	40	10	0.50	2.500	2° 30' 00"
		ST	1887+53.92					
	3.1.029	TS	1918+22.70	30	10	0.75	3.000	3° 00' 00"
		ST	1920+60.67					
	3.1.030	TS	1923+22.80	25	10	0.50	6.833	6° 50' 00"
		ST	1942+78.07					
	3.1.031	TS	1959+83.66	25	10	0.50	6.371	6° 22' 15"
		ST	1972+53.54					
	3.1.032	TS	1974+91.26	35	10	0.50	4.000	4° 00' 00"
		ST	1982+34.08					
	3.1.033	TS	1985+59.45	55	30	0.50	1.592	1° 35' 30"
		ST	2007+51.28					
	3.1.034	TS	2015+02.15	50	30	0.50	1.000	1° 00' 00"
		ST	2019+06.25					
	Existing Turnout	LLT	2019+36.69					
		PI	2020+97.36					
		PS	2021+55.60					
	Mechanicville Station		2025+00					
	3.1.035	TS	2026+93.59	45	30	0.50	2.000	2° 00' 00"
		ST	2038+14.37					
	3.1.036	TS	2039+42.05	35	30	1.00	3.950	3° 57' 00"
		ST	2054+67.65					
	3.1.037	TS	2065+77.65	35	30	0.75	3.504	3° 30' 15"
		ST	2073+22.11					
	3.1.038	TS	2074+33.95	35	30	1.13	4.021	4° 01' 15"
		ST	2088+33.22					
	3.1.039	TS	2108+04.91	40	30	0.13	2.387	2° 23' 15"
		ST	2141+13.45					

PAN-AM

3.1.040	TS	2148+06.54	40	30	0.63	3.183	3° 11' 00"
	ST	2163+07.16					
Proposed #20 Turnout	PS	2169+92.12	45	45	Begin Proposed Siding		
	PI	2170+50.37					
	LLT	2172+11.04					
3.1.041	TS	2180+90.31	40	30	0.13	2.533	2° 32' 00"
	ST	2196+99.51					
3.1.042	TS	2201+25.06	50	30	0.50	1.908	1° 54' 30"
	ST	2212+02.62					
3.1.043	TS	2214+11.30	45	30	1.00	1.908	1° 54' 30"
	ST	2219+38.66					
3.1.044	TS	2221+61.18	35	30	2.50	5.733	5° 44' 00"
	ST	2231+87.33					
3.1.045	TS	2237+61.75	40	30	0.50	1.908	1° 54' 30"
	ST	2242+52.59					
Proposed #20 Turnout	LLT	2255+19.39	45	45	End Proposed Siding		
	PI	2256+80.06					
	PS	2257+38.30					
3.1.046	TS	2266+45.28	35	30	0.75	3.500	3° 30' 00"
	ST	2280+60.76					
3.1.047	TS	2284+27.31	45	30	1.50	2.500	2° 30' 00"
	ST	2288+50.37					
3.1.048	TS	2290+93.07	45	30	0.50	1.500	1° 30' 00"
	ST	2294+93.73					
3.1.049	TS	2301+37.15	35	30	1.13	4.092	4° 05' 30"
	ST	2313+41.19					
3.1.050	TS	2325+33.40	60	30	0.50	0.954	0° 57' 15"
	ST	2336+50.29					
3.1.051	TS	2363+95.03	55	30	0.75	1.433	1° 26' 00"
	ST	2373+95.67					
3.1.052	TS	2375+33.23	40	30	0.25	2.750	2° 45' 00"
	ST	2384+91.71					
3.1.053	TS	2392+12.91	35	30	1.00	3.821	3° 49' 15"
	ST	2407+35.35					
3.1.054	TS	2409+02.78	35	30	0.75	3.450	3° 27' 00"
	ST	2430+77.37					
3.1.055	TS	2434+29.35	35	30	1.13	3.992	3° 59' 30"
	ST	2444+92.11					
3.1.056	TS	2463+21.01	35	30	0.75	3.504	3° 30' 15"
	ST	2471+75.87					
3.1.057	TS	2472+98.22	45	30	1.75	3.275	3° 16' 30"
	ST	2487+31.62					
3.1.058	TS	2514+17.97	45	30	1.75	3.000	3° 00' 00"
	ST	2528+41.90					
3.1.059	TS	2530+18.13	45	30	0.50	2.292	2° 17' 30"
	ST	2543+76.74					

PAN-AM	3.1.060	TS	2562+61.55	60	40	0.50	1.000	1° 00' 00"
		ST	2581+92.04					
	3.1.061	TS	2588+78.02	50	40	1.00	2.200	2° 12' 00"
		ST	2600+70.41					
	Proposed #20 Turnout	PS	2674+92.12	45	45	Begin Proposed Siding		
		PI	2675+50.37					
		LLT	2677+10.83					
	Proposed #20 Turnout	LLT	2782+73.41	45	45	End Proposed Siding		
		PI	2784+33.88					
		PS	2784+92.12					
	3.1.062	TS	2810+82.51	60	40	0.50	1.300	1° 18' 00"
		ST	2829+24.08					
	3.1.063	TS	2878+98.24	60	40	0.50	1.275	1° 16' 30"
		ST	2939+50.05					
	3.1.064	TS	2942+10.47	60	40	0.50	0.950	0° 57' 00"
		ST	2970+18.05					
	3.1.065	TS	3008+54.25	35	30	0.50	1.867	1° 52' 00"
		ST	3010+65.71					
	Existing Turnout	LLT	3010+66.52					
		PI	3010+27.28					
		PS	3012+85.53					
VTR B&R ML	Existing Turnout	PS	3020+10.05					
		PI	3020+39.95					
		LLT	3021+19.51					
	3.1.066	PC	3021+22.78	15	15	0.00	4.083	4° 05' 00"
		PT	3041+52.06					
	3.1.067	TS	3044+38.88	40	30	0.75	3.500	3° 30' 00"
		ST	3052+63.40					
	3.1.068	TS	3064+47.73	60	40	0.50	1.617	1° 37' 00"
		ST	3073+33.98					
	3.1.069	TS	3076+48.80	30	30	1.25	4.021	4° 01' 15"
		ST	3086+94.43					
	3.1.070	TS	3087+78.36	30	30	0.50	3.033	3° 02' 00"
		ST	3090+52.09					
	3.1.071	TS	3094+73.01	60	40	0.75	1.783	1° 47' 00"
		ST	3114+84.65					
	Proposed #20 Turnout	PS	3115+84.64	45	45	Begin Proposed Siding* (see note at end in regards to siding curves)		
		PI	3116+42.88					
		LLT	3118+03.55					
	3.1.072	TS	3120+24.57	60	40	1.25	2.000	2° 00' 00"
		ST	3137+49.21					
	Proposed #20 Turnout	LLT	3162+77.03	45	45	End Proposed Siding		
		PI	3164+37.50					
		PS	3164+95.74					
	3.1.073	TS	3169+45.30	55	40	1.25	2.250	2° 15' 00"
		ST	3181+54.82					

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3.1.074	TS	3194+64.01	60	40	0.75	1.833	1° 50' 00"
	ST	3209+48.91					
3.1.075	TS	3229+26.91	50	40	2.75	3.583	3° 35' 00"
	ST	3238+79.30					
3.1.076	TS	3240+84.41	50	40	2.00	3.050	3° 03' 00"
	ST	3253+70.50					
3.1.077	TS	3276+22.65	50	40	2.00	3.000	3° 00' 00"
	ST	3298+47.23					
3.1.078	TS	3303+45.31	55	40	1.50	2.533	2° 32' 00"
	ST	3318+24.35					
3.1.079	TS	3328+14.42	50	40	2.00	3.000	3° 00' 00"
	ST	3348+32.31					
N. Bennington Station		3350+00					
3.1.080	TS	3362+05.78	40	40	1.50	3.167	3° 10' 00"
	ST	3382+09.07					
3.1.081	TS	3383+38.56	40	40	2.25	4.000	4° 00' 00"
	ST	3393+46.62					
3.1.082	TS	3408+15.86	55	40	0.50	1.000	1° 00' 00"
	ST	3414+45.24					
3.1.083	TS	3473+13.77	50	40	2.25	3.183	3° 11' 00"
	ST	3485+62.63					
3.1.084	TS	3490+84.56	50	40	1.75	2.867	2° 52' 00"
	ST	3509+78.03					
3.1.085	TS	3536+36.54	55	40	1.50	2.500	2° 30' 00"
	ST	3557+63.95					
3.1.086	TS	3561+08.21	50	40	2.00	3.000	3° 00' 00"
	ST	3574+92.66					
3.1.087	TS	3590+51.40	60	40	0.50	1.500	1° 30' 00"
	ST	3600+93.32					
3.1.088	TS	3603+65.73	55	40	0.75	2.000	2° 00' 00"
	ST	3620+55.79					
3.1.089	TS	3628+60.83	50	40	2.00	3.000	3° 00' 00"
	ST	3642+73.88					
3.1.090	TS	3659+89.84	50	40	2.00	3.000	3° 00' 00"
	ST	3679+99.27					
3.1.091	TS	3693+11.06	50	40	2.00	3.000	3° 00' 00"
	ST	3712+77.44					
3.1.092	TS	3726+04.81	50	40	2.00	3.000	3° 00' 00"
	ST	3737+05.32					
3.1.093	TS	3775+00.66	50	40	2.25	3.250	3° 15' 00"
	ST	3772+43.88					
3.1.094	TS	3791+13.90	60	40	0.50	1.000	1° 00' 00"
	ST	3801+98.62					
3.1.095	TS	3803+95.88	50	40	2.00	3.000	3° 00' 00"
	ST	3810+09.84					

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3.1.096	TS	3825+67.92	55	40	2.00	2.667	2° 40' 00"
	ST	3851+97.60					
3.1.097	TS	3864+91.89	55	40	0.75	2.000	2° 00' 00"
	ST	3883+49.98					
3.1.098	TS	3902+84.92	55	40	1.50	2.500	2° 30' 00"
	ST	3914+56.35					
3.1.099	TS	3927+12.71	55	40	0.75	2.000	2° 00' 00"
	ST	3944+34.44					
3.1.100	TS	3971+85.61	50	40	2.00	3.000	3° 00' 00"
	ST	3984+67.38					
3.1.101	TS	3989+48.18	50	40	3.00	3.371	3° 22' 15"
	ST	4002+41.86					
3.1.102	TS	4003+53.55	50	40	3.00	3.333	3° 20' 00"
	ST	4018+37.50					
3.1.103	TS	4022+30.03	50	40	2.50	3.504	3° 30' 15"
	ST	4043+65.37					
3.1.104	TS	4046+82.86	50	40	0.75	1.250	1° 15' 00"
	ST	4061+89.52					
3.1.105	TS	4063+39.56	50	40	2.25	3.017	3° 01' 00"
	ST	4076+24.63					
3.1.106	TS	4087+27.41	60	40	0.50	1.000	1° 00' 00"
	ST	4121+37.52					
3.1.107	TS	4144+35.64	60	40	0.50	1.000	1° 00' 00"
	ST	4164+86.03					
3.1.108	TS	4177+34.62	60	40	0.50	1.000	1° 00' 00"
	ST	4187+24.75					
3.1.109	TS	4247+79.55	55	40	0.75	2.000	2° 00' 00"
	ST	4259+27.05					
3.1.110	TS	4295+58.40	60	40	0.50	1.000	1° 00' 00"
	ST	4312+01.90					
3.1.111	TS	4357+03.49	60	40	0.50	1.000	1° 00' 00"
	ST	4367+85.77					
3.1.112	TS	4389+25.89	55	40	0.75	2.000	2° 00' 00"
	ST	4405+02.23					
3.1.113	TS	4426+37.62	60	40	0.50	1.500	1° 30' 00"
	ST	4445+43.01					
Manchester Station		4450+00					
3.1.114	TS	4454+36.78	55	40	0.75	2.000	2° 00' 00"
	ST	4466+52.32					
3.1.115	TS	4479+95.30	50	40	2.00	3.000	3° 00' 00"
	ST	4508+43.96					
3.1.116	TS	4511+85.96	55	40	0.75	2.000	2° 00' 00"
	ST	4539+70.40					
3.1.117	TS	4576+45.99	55	40	0.75	2.000	2° 00' 00"
	ST	4586+18.42					

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3.1.118	TS	4607+79.18	55	40	0.75	2.000	2° 00' 00"
	ST	4624+40.32					
3.1.119	TS	4644+15.28	55	40	1.50	2.500	2° 30' 00"
	ST	4659+93.79					
3.1.120	TS	4675+93.58	60	40	0.50	1.000	1° 00' 00"
	ST	4704+51.96					
3.1.121	TS	4777+78.29	60	40	0.50	1.000	1° 00' 00"
	ST	4791+15.79					
3.1.122	TS	4833+92.22	60	40	0.50	1.500	1° 30' 00"
	ST	4869+29.73					
3.1.123	TS	4877+84.22	50	40	3.25	4.000	4° 00' 00"
	ST	4896+56.65					
3.1.124	TS	4901+57.37	55	40	1.00	2.000	2° 00' 00"
	ST	4909+62.23					
3.1.125	TS	4915+17.38	35	35	1.50	3.750	3° 45' 00"
	ST	4920+64.65					
3.1.126	TS	4921+69.73	30	30	0.50	3.000	3° 00' 00"
	ST	4932+64.15					
3.1.127	TS	4945+63.50	50	40	2.00	3.000	3° 00' 00"
	ST	4952+82.57					
3.1.128	TS	4960+24.07	60	40	0.50	0.750	0° 45' 00"
	ST	4965+71.43					
3.1.129	TS	5022+11.70	60	40	0.50	1.500	1° 30' 00"
	ST	5033+87.77					
3.1.130	TS	5051+01.71	60	40	0.50	1.500	1° 30' 00"
	ST	5057+78.72					
Proposed #20 Turnout	PS	5166+68.25	45	40	Begin Proposed Siding		
	PI	5167+26.49					
	LLT	5168+86.96					
Proposed #20 Turnout	LLT	5197+50.20	45	40	End Proposed Siding		
	PI	5199+10.66					
	PS	5199+68.91					
3.1.131	TS	5096+03.61	60	40	0.50	1.000	1° 00' 00"
	ST	5106+17.85					
3.1.132	TS	5226+11.01	55	40	1.50	2.500	2° 30' 00"
	ST	5238+40.05					
3.1.133	TS	5246+18.63	50	40	2.00	3.000	3° 00' 00"
	ST	5260+01.12					
3.1.134	TS	5303+11.54	40	40	1.50	3.000	3° 00' 00"
	ST	5318+69.01					
3.1.135	TS	5328+54.13	35	35	1.50	3.500	3° 30' 00"
	ST	5335+15.65					
3.1.136	TS	5336+20.38	55	40	1.50	2.500	2° 30' 00"
	ST	5341+28.71					
3.1.137	TS	5349+14.99	55	40	0.75	2.000	2° 00' 00"
	ST	5361+72.96					

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3.1.138	TS	5398+99.00	60	40	0.50	1.500	1° 30' 00"
	ST	5411+02.87					
3.1.139	TS	5431+83.22	40	35	2.00	2.500	2° 30' 00"
	ST	5439+35.27					
3.1.140	TS	5441+31.26	30	30	0.50	3.000	3° 00' 00"
	ST	5449+74.27					
3.1.141	TS	5451+32.28	60	40	0.50	1.000	1° 00' 00"
	ST	5458+41.00					
3.1.142	TS	5490+79.39	60	40	0.50	1.000	1° 00' 00"
	ST	5496+79.20					
3.1.143	TS	5520+22.73	60	40	0.50	1.000	1° 00' 00"
	ST	5534+82.85					
3.1.144	TS	5560+78.98	60	40	0.50	1.750	1° 45' 00"
	ST	5577+40.50					
3.1.145	TS	5584+90.75	60	40	0.50	1.000	1° 00' 00"
	ST	5602+64.32					
3.1.146	TS	5622+45.96	60	40	0.50	1.500	1° 30' 00"
	ST	5631+63.31					
3.1.147	TS	5652+13.41	60	40	0.50	1.000	1° 00' 00"
	ST	5664+89.65					
3.1.148	TS	5666+25.40	60	40	0.50	1.000	1° 00' 00"
	ST	5677+94.51					
3.1.149	TS	5705+85.96	50	40	0.75	2.000	2° 00' 00"
	ST	5725+41.27					
3.1.150	TS	5755+86.43	40	35	1.25	3.000	3° 00' 00"
	ST	5766+27.70					
3.1.151	TS	5767+62.44	50	40	2.00	3.000	3° 00' 00"
	ST	5776+71.20					
3.1.152	TS	5786+02.37	55	40	0.75	2.000	2° 00' 00"
	ST	5795+63.89					
3.1.153	TS	5800+30.51	40	40	1.75	2.333	2° 20' 00"
	ST	5823+51.41					
3.1.154	TS	5834+59.91	40	40	1.25	2.500	2° 30' 00"
	ST	5850+58.54					
3.1.155	TS	5851+86.11	60	40	0.50	1.500	1° 30' 00"
	ST	5860+63.16					
3.1.156	TS	5877+13.32	45	25	0.50	1.000	1° 00' 00"
	ST	5884+50.11					
3.1.157	TS	6126+24.55	30	15	0.50	2.500	2° 30' 00"
	ST	6128+16.87					
3.1.158	TS	6134+70.49	15	10	0.00	12.000	12° 00' 00"
	ST	6146+04.30					
Existing Turnout	LLT	6146+08.10	15	15	0		
	PI	6146+87.66					
	PS	6147+17.56					
3.1.159	PC	6147+36.63	15	10	0.00	12.000	12° 00' 00"
	PT	6152+04.99					

3.1.160	TS	6152+92.93	20	15	0.75	10.929	10° 55' 45"
	ST	6158+75.33					
3.1.161	TS	6160+60.90	15	15	0.25	4.775	4° 46' 30"
	ST	6163+58.08					
3.1.162	TS	6164+43.33	15	15	0.75	11.000	11° 00' 00"
	ST	6167+13.06					
Rutland Station		6167+13.06					

Curve on siding at STA 3115+00 not concentric with main track (Compound Curve)

Curve Speed	PS	3115+84.64	SC	3119+35.59	CS	3134+77.89
freight = 40 MPH	PI	3116+42.88	CS	3122+67.43	ST	3137+57.62
pass = 45 MPH	TS	3118+49.42	SC	3125+19.59		

D

Sample Amtrak Agreement

AGREEMENT FOR THE PROVISION OF RAIL PASSENGER SERVICE

Between The

NATIONAL RAILROAD PASSENGER CORPORATION

And The

STATE OF INDIANA

October 1, 2013 Through September 30, 2014

Indiana EDS No. A249-14-320314A

THIS AGREEMENT, herein referred to as the "Agreement," is made as of the 1st day of October, 2013 between the National Railroad Passenger Corporation, a corporation organized under federal law and the laws of the District of Columbia and having its principal place of business in Washington, D.C. ("Amtrak") and the State of Indiana acting by and through the Indiana Department of Transportation (the "State" or "INDOT").

WHEREAS, the STATE has determined a need to grant funds to Amtrak to provide rail passenger service as described herein and reasonably expects sufficient funds to be made available to pay for such service, and that it is authorized by law to enter into this Agreement; and

WHEREAS, under Section 209 of the Passenger Rail Investment and Improvement Act of 2008, Pub. L. No. 110-432, 122 Stat. 4848 ("PRIIA"), Congress required, among other things, that Amtrak, in consultation with the relevant states and the District of Columbia, develop and implement a methodology for allocating the operating and capital costs of rail routes of not more than 750 miles outside the segment of the continuous Northeast Corridor railroad line between Boston, Massachusetts and Washington, District of Columbia among the relevant states and the District of Columbia, and Amtrak; and

WHEREAS, Amtrak developed such a methodology in consultation with a group of states, but was unable to achieve the necessary concurrence on the methodology from all relevant states and the District of Columbia as required by PRIIA. Accordingly, on November 21, 2011, Amtrak petitioned the Surface Transportation Board (the "STB") to adopt Amtrak's proposed methodology; and

WHEREAS, in a decision effective April 14, 2012, the STB adopted Amtrak's proposed methodology to meet the requirements of PRIIA (the "Agreed 209 Methodology"), which decision is attached hereto and incorporated herein as **Appendix V**; and

WHEREAS, the purpose of this Agreement is to provide for an Indiana based system of intercity railroad passenger trains in connection with Amtrak's nationwide system, such system to operate for the benefit of Indiana residents and passengers connecting to interstate Amtrak trains; and

WHEREAS, the intercity railroad passenger service covered by this Agreement consists of one round-trip, four days per week (*Hoosier State Service* – Trains 850 and 851) between Chicago, Illinois and Indianapolis, IN, collectively referred to herein as the "Hoosier State Service"; and

WHEREAS, the Hoosier State Service is subject to the Agreed 209 Methodology; and

WHEREAS, the Hoosier State Service plays an important role in the effective operation of Amtrak's Beech Grove, Indiana heavy maintenance shop by ferrying rolling stock between Chicago and Beech Grove; and

WHEREAS, the State of Indiana, in conjunction with certain local units of government that are served by the Hoosier State Service, support a multimodal transportation system that includes passenger rail as a sustainable service option; and

WHEREAS, the State and its local partners have agreed to grant funds to Amtrak to continue operation of rail passenger service on the Hoosier State Service as described herein, and reasonably expects sufficient funds to be made available to pay for such service; and

WHEREAS, though the State and its local partners wish for the Hoosier State Service to continue, the State believes that the current operating and funding model can be improved through collaboration among the State, Amtrak and applicable host freight railroads in order to achieve a viable long-term solution for the successful operation of the Hoosier State Service and passenger rail service in Indiana; and

WHEREAS, the State expects Amtrak work collaboratively with the State, local communities, and other parties as may be mutually agreed upon by Amtrak and the State, to achieve certain measureable improvements to the level of Hoosier State Service (as defined herein) as a return on the tax dollars being invested to continue service;

NOW THEREFORE, the State will grant the funds provided by this Agreement to Amtrak subject to the following conditions:

Section 1. Service to be Provided and Permissible Expenditures of Funds.

(a.) Subject to sufficient appropriation of Federal funding for Amtrak, the term of this Agreement is for twelve (12) months commencing October 1, 2013, over the route(s), serving the stations, and substantially in accordance with the schedules and other criteria set forth below next to each route description, with the intermediate stops set forth in **Appendix I** to this Agreement, unless the State gives its prior written approval to any deviation from such parameters. In the event Federal funding for Amtrak

for federal fiscal year 2014 is insufficient to support the national system, Amtrak may terminate this Agreement on thirty (30) days prior written notice to the State. The State may terminate this Agreement on thirty (30) days prior written notice to Amtrak.

(b.) Amtrak shall not be required to provide service on any other route, or to increase any train frequency or train consist, except pursuant to a mutually agreed upon amendment hereto, consistent with the Agreed 209 Methodology.

(c.) Amtrak will make available to the Hoosier State Service sufficient locomotives and cars so as to operate the Service according to the schedules and other criteria established by this Agreement consistent with the funding requirements of the Agreed 209 Methodology. The operating conditions of said locomotives and cars shall be in compliance with standards established under Federal laws and regulations. Amtrak will provide operating crews (including sufficient numbers of employees, as provided under applicable regulations and Amtrak labor agreements), reservation and information services, station facilities and agents at agreed-upon stations in the Hoosier State Service. Any and all station staffing to be implemented during the term of this Agreement shall require mutual written approval of the parties, and must, as applicable, be in full compliance with all existing Amtrak labor agreements. All trains in the Hoosier State Service will be dispatched in a right and ready condition. All trains shall, at a minimum, consist of one locomotive and two passenger coach cars. Coach cars shall have accommodations for passenger hand-carried luggage. Amtrak shall comply with the requirements of the Americans With Disabilities Act in its performance of these services.

(d.) The parties shall cooperate for the purpose of promoting the Hoosier State Service, and shall take such other actions as they may agree are conducive to the provision of the Hoosier State Service on a regular, efficient and economical basis; provided, however, that the State shall have no obligation to contribute moneys for that purpose or for purposes other than those set forth in Section 3 of this Agreement. Amtrak shall advertise and market the Hoosier State Service and may incorporate the Hoosier State Service in its general advertising and promotional programs, as it deems appropriate. Amtrak will, as practical, endeavor to provide the State with advance notice of future promotions and obtain State concurrence on special promotions relating to the Hoosier State Service.

(e.) Amtrak shall insert in all published timetables the following statement: "This service is financed primarily through funds made available by the Indiana Department of Transportation and communities along the route."

(f.) Amtrak's obligations to provide the Hoosier State Service shall not be deemed to be satisfied through the operation of other regularly scheduled interstate trains. This Agreement shall not prevent Amtrak from altering or terminating any other service it provides.

(g.) Amtrak recognizes the State's financial contribution to the provision of the Hoosier State Service and acknowledges the budgetary limitations of the State. Amtrak further recognizes that reducing cost whenever possible is important to the State. Accordingly, the parties acknowledge that it is their mutual objective to provide the citizens of the State with a quality transportation service, operated in a cost effective manner. In accordance with this objective, Amtrak commits that it will endeavor to work with the State to pursue revenue growth and to achieve cost efficiencies and/or cost reduction in the operation of the Hoosier State Service, as appropriate.

Section 2. Changes Affecting Hoosier State Service.

(a.) The State may at any time request changes in any aspect of the Hoosier State Service by giving written notice of such request to Amtrak. Such notice shall be faxed and sent registered mail with confirmed delivery and shall contain a proposed date of implementation and information in sufficient detail to support and justify the proposed change. Amtrak's response shall state that it concurs or, in the alternative, give reasons in sufficient detail why it does not concur with the proposed change, such concurrence not to be unreasonably withheld. If Amtrak fails to respond in writing within sixty (60) days of receipt of such notice, it shall be deemed to have concurred in the proposed change. If after consultation the parties cannot agree, either may initiate the dispute resolution provisions of Section 9 hereof.

(b.) Amtrak may at any time request changes in any aspect of the Hoosier State Service by giving written notice of such request to the State. Such notice shall be faxed and sent registered mail with confirmed delivery and shall contain a proposed date of implementation and information in sufficient detail to support and justify the proposed change. The State's response shall state that it concurs or, in the alternative, give reasons in sufficient detail why it does not concur with the proposed change, such concurrence not to be unreasonably withheld. If the State fails to respond in writing within sixty (60) days of receipt of such notice, it shall be deemed to have concurred in the proposed change. If after consultation the parties cannot agree, either may initiate the dispute resolution provisions of Section 9 hereof.

(c.) If Amtrak operation on, or access to or over, required rail lines shall be disrupted or unavailable for any reason, including force majeure as set forth in Section 6 herein, Amtrak may suspend or reroute any part of the Hoosier State Service or use buses instead of trains for so long as such operation or access is disrupted or unavailable. In such cases Amtrak shall take all reasonable measures to promptly notify the State, by telephone at (317) 233-2376, of any such suspension or rerouting or bus usage. Amtrak agrees to involve State in any decisions it reaches with the host railroad should the host railroad refuse to reasonably provide access to its tracks before, during or after a disruption under this section. Amtrak and State also agree to take all reasonable measures to defend Amtrak's right of access to the host railroad's tracks.

(i.) Amtrak and the State agree that they shall cooperate for the purpose of mitigating the impact of service disruptions by alerting passengers, the appropriate stations and the public through appropriate public media.

(d.) Amtrak may at any time, with or without the State's concurrence, make changes in the Hoosier State Service that are, in its opinion, necessary for safety, environmental, or federal regulatory reasons. Amtrak shall promptly notify the State of any such changes. Said changes include, but are not limited to, compliance with rulings by the Federal Railroad Administration, the Department of Homeland Security, the National Transportation Safety Board, the Food and Drug Administration or the Environmental Protection Agency.

(e.) Any changes to the Hoosier State Service made pursuant to subsections (a), (b), (c) or (d) above may, if agreed to in writing between the parties, result in an adjustment of the amounts paid by the State consistent with the Agreed 209 Methodology.

Section 3. Amount and Timing of Funds by the State.

(a.) The State shall pay Amtrak the following for operation of the Hoosier State Service each month from October 1, 2013 through September 30, 2014:

(i). The sum of Two Hundred Forty-Four Thousand and Nine Hundred and Sixteen Dollars (**$244,916.00**) per month, calculated in accordance with the Agreed 209 Methodology and representing a fixed fee for the entire cost of the service, including Third Party Costs for Fuel, Host Railroad Maintenance of Way, Performance Incentive and Other Costs and Capital Costs – Passenger Service Equipment. The State and Amtrak agree that this amount represents a fixed fee for the Service, mutually agreed upon by the parties and not subject to audit adjustment.

(ii.) The parties further agree that in accordance with the provisions of Section 3(b) below, the State's monthly payment to Amtrak for Hoosier State Service each month from October 1, 2013 through September 30, 2014, as provided by Section 3(a)(i) above, shall be offset, in part, by a monthly credit in the amount of Twenty-One Thousand and Six Hundred and Sixty-Seven Dollars (**$21,667.00**). The parties further agree that the State shall be entitled to such credit only for each full month of service during which the State-supported Hoosier State Service is operated.

(iii) Capitalized terms shall have the meaning set forth in the Agreed 209 Methodology.

(1.) ***Operating Costs*** – general. Operating Costs will be calculated according to the Agreed 209 Methodology. Route Costs and Additives, and Third Party Costs shall be

fixed for the term of the Agreement based upon a monthly pro-rata allocation of the amounts specified in **Appendix II**. Credits for Passenger and Other Allocated Revenues shall be fixed for the duration of the Agreement in the amounts specified in **Appendix II**. The State and Amtrak agree that the Route Costs and Additives, Third Party Costs and Passenger and Other Allocated Revenues for the Hoosier State Service have been mutually agreed upon by the parties and are not subject to audit adjustment.

(2.) ***Capital Costs*** – Passenger Service Equipment. Capital Costs for Passenger Service Equipment are included in this Agreement and will be calculated as a usage fee according to the Agreed 209 Methodology and will be charged to the State on a monthly pro-rata allocation of the amount specified in **Appendix III**. On or before March 1, 2015, Amtrak shall provide the State with an accounting of the actual and verifiable equipment capital investments made by Amtrak during the period of October 1, 2013 through September 30, 2014 and if applicable, the Continuation Period set forth in Section 3(f), in accordance with the 5-year equipment capital investment program described in the Agreed 209 Methodology, along with the revised FY 2014 Equipment Capital Charge based on that accounting.

(b.) Amtrak may add units of rolling stock, either locomotives or railcars, to the Hoosier State Service to be transported from Chicago to Indianapolis or from Indianapolis to Chicago (i) for the purpose of moving said rolling stock from or to Amtrak's Beech Grove shop, or (ii) for any purpose other than transporting passengers as part of the Hoosier State Service ("Additional Units"). Amtrak anticipates that it shall add no more than five hundred twenty (520) units to the Hoosier State Service in Fiscal Year 2014. The State shall be permitted to deduct a credit of Twenty-One Thousand and Six Hundred and Sixty-Seven Dollars ($21,667.00) (or approximately Five Hundred Dollars ($500.00) per unit) per month from the bill for making the State-supported train available for these movements. Subject to the provisions of Section 3(a)(ii) above, this credit shall be available to the State only for each full month during which the State-supported Hoosier State Service is operated.

(c.) The State shall remit to Amtrak timely monthly payments in accordance with the Payment Schedule set forth in **Appendix IV**. All monthly payments due under Section 3(a) shall be payable to Amtrak, in full, forty-five (45) days after first of each month for service provided during the preceding month.

(d.) Any such payment that is due on a date that precedes the actual execution of this Agreement shall be due and payable forty-five (45) days after the date of such execution. Except for any such payments due on the date of execution hereof, the State shall remit to Amtrak all contractually due

amounts under Section 3(a) in accordance with the monthly payment schedule specified above and presented in **Appendix IV** to this Agreement. If the State fails to remit full payment when due, Amtrak may discontinue any or all of the Hoosier State Service after thirty (30) days prior notice in writing to the State.

(e.) Any termination hereunder shall be without prejudice to Amtrak's right to receive payment through the date of actual termination of the Hoosier State Service, and shall be without prejudice to the State's right to receive a credit for movement of Additional Units on the Hoosier State Service for each full month of service for which the Hoosier State Service was operated.

(f.) All payments shall be made in arrears and according to the terms of this Agreement and in conformance with State fiscal policies and procedures and, as required by IC 4-13-2-14.8, by electronic funds transfer to the financial institution designated by Amtrak in writing unless a specific waiver has been obtained from the Indiana Auditor of State. No payments will be made in advance of receipt of the services that are the subject of this Agreement except as permitted by IC 4-13-2-20.

(g.) In the event the parties fail to reach agreement for operation of the Service for the period beyond September 30, 2014, the parties agree that the terms of this Agreement shall govern continued operation of the Hoosier State Service for a one-time extension period of up to an additional four (4) months ("Continuation Period"). In such event, the State agrees to reimburse Amtrak for the fixed fee, at the level established for the period October 1, 2013 through September 30, 2014, plus a three percent (3%) escalation fee, subject to Section 21 (Funding Cancellation) of this Agreement. Under no circumstances will the Continuation Period extend beyond January 31, 2015.

(h.) From time to time, Amtrak may make updates to the Amtrak Performance Tracking (APT) system which is the basis of many cost allocations within the Agreed 209 Methodology, or may make updates to Operating or Capital Cost forecasts derived from APT data. In the event any such updates are, consistent with the requirements of Section 209 Methodology, determined by Amtrak to warrant the revision of any such costs in a manner that would result in an adjustment of the amounts paid by or to be paid by the State under the terms of this Agreement, Amtrak will notify the State of such adjustment(s) and, subject to mutual agreement of the parties, amend this Agreement accordingly.

(i.) The total amount of funds paid from INDOT to Amtrak under this Agreement shall not exceed the sum of Three Million Six Hundred Five Thousand Dollars (**$3,605,000.00**).

Section 4. Indemnity and Defense.

Amtrak shall assume all liability, defend, indemnify and hold harmless the State of Indiana, INDOT, their officials, and employees from any and all losses or expenses (including reasonable attorney's fees

incurred in enforcing this section), arising from claims, actions, or proceedings for injury to or death of any person or for damage to or loss of any property arising from the operation of the Hoosier State Service. If any claim, action or proceeding shall at any time be brought against the State asserting a liability for such injury, death, damage or loss, the State shall promptly give notice thereof to Amtrak, and Amtrak shall promptly undertake the defense of such claim, action or proceeding. The State agrees to thereafter provide such information and reasonable assistance as Amtrak may request from time to time, provided that all such requests comport with Indiana law. The State shall not provide such indemnification to Amtrak.

Section 5. Inspections.

(a.) The State may, at any reasonable time and upon three (3) business days' notice, inspect Amtrak's facilities and equipment used in providing the Hoosier State Service; provided, that such inspection shall comply with all applicable safety rules and regulations and shall not hinder or delay the operation of the service. Subject to compliance with Amtrak's policies on locomotive access, this will include authority to ride the head end or locomotive of State-supported trains for those State employees or approved representatives listed on **Appendix VI** of this Agreement. Amtrak will provide the State employees or approved representatives authorized under **Appendix VI** with all necessary safety equipment, other than protective footwear. The State agrees to notify Amtrak in advance of its employees' or approved representatives' intent to ride the head end or locomotive of State-supported trains, and to require that those employees or approved representatives sign a waiver releasing Amtrak from any liability that may result therefrom. The State will provide written notice to Amtrak of any requested changes to this list during the term of this Agreement as soon as possible. Amtrak will provide its approval or rejection of the request as soon as possible.

(b.) Upon ten (10) business days' written notice, Amtrak shall permit the State, or a designated representative, access to inspect all books, records and supporting documents relating to the Hoosier State Service only to verify the payments made and credits applied under Section 8 of this Agreement. Amtrak agrees to cooperate fully with any such audit conducted by the State, and to provide full access to all relevant materials, but only to the extent necessary to verify payments made and credits applied under Section 8 of this Agreement. Amtrak further agrees that all such books, records, and supporting documents shall be maintained by Amtrak and shall be accessible to the State for three (3) years following expiration of the Hoosier State Service provided for in this Agreement. All such financial information made available to the State shall be deemed to be a trade secret, or to contain proprietary, privileged or confidential information. Subject to applicable law, no other use of such information shall be made without Amtrak's express written approval.

(c.) Amtrak shall provide the State with access to daily "Delay Reports" for each train within the

Hoosier State Service. In addition, Amtrak shall also provide the State with monthly on time performance results for the Hoosier State Service, which shall include, without limitation, daily on time performance data for each train listed in **Appendix I** to include delay by railroad, delay code or causation, minutes of delay and rank of each category in terms of percentage of delay attributed. Amtrak monthly reports will also include daily counts of passengers boarding and alighting at each station, and the daily car count for Hoosier State Service trains. Amtrak will make individual conductor delay reports available to the State upon request and upon five (5) business days notice.

(d.) Amtrak shall make available to the State such ridership data relating to the Hoosier State Service that is available in Amtrak's Data Warehouse system, e.g., passengers carried, revenues and passenger miles, as may be mutually agreed upon by the parties. Such data shall be computed and furnished on a monthly basis. Amtrak shall endeavor to provide such other performance data relating to the Hoosier State Service as may be reasonably available.

Section 6. Force Majeure.

The obligations of Amtrak hereunder shall be subject to force majeure. Amtrak shall not be liable for any failure to perform, or for any delay or cancellation in connection with the performance of any obligation hereunder, if such failure, delay or cancellation occurs due to causes beyond the control and without fault or negligence of Amtrak, including but not restricted to the following: acts of God; riots, insurrection, terrorism or war; or strikes or picketing. If, because of an event of force majeure, Amtrak is unable to carry out its obligations under this Agreement, then its obligation shall be suspended to the extent made necessary by such force majeure and during its continuance. Amtrak promptly shall give the State written notice of such force majeure with sufficient details as to the extent and probable duration of the effects. Amtrak shall mitigate the effects of such force majeure (other than strikes or lockouts, which shall be wholly at the discretion of Amtrak) insofar as is commercially reasonable, with all reasonable dispatch.

Section 7. Termination.

In addition to any other provision hereof, this Agreement may be terminated by either party upon one hundred and eighty (180) days' notice to the other. Termination of this Agreement shall be without prejudice to the State's obligation to reimburse Amtrak hereunder for the Hoosier State Service and for any associated capital or other costs, provided until and including the date of termination.

Section 8. Pay For Performance.

Because timeliness of train operations is of the essence of this Agreement and actual damages to the State as a result of delays or cancellations are not readily calculable, Amtrak shall pay the State, at the end of the Agreement Term the sum of Five Thousand Dollars (**$5,000.00**) for each Hoosier State Service train that is cancelled (annulled) before departing its origin point, as set forth in **Appendix I**, for reasons other than those set forth in Section 2(c), 2(d) or Section 6 hereof, and for which substitute transportation

(e.g., bus) is not provided. Amtrak will mitigate the effects of such suspension insofar as is commercially reasonable with all reasonable dispatch. For all service disruptions, Amtrak will coordinate with the State and will alert the passengers and public through appropriate public media.

Section 9. Dispute Resolution.

Any controversy or claim arising out of or relating to this Agreement, or the breach thereof, may be settled by arbitration upon written agreement of the parties. If the parties agree in writing, such arbitration shall be administered by the American Arbitration Association under its Commercial Arbitration Rules, and a judgment on the award rendered by the arbitrators may be entered in either the United States District Court for the Southern District of Indiana or the United States District Court for the Northern District of Indiana. If the parties do not agree in writing to submit to arbitration, they may instead participate in mediation or another dispute resolution procedure to resolve any controversy or claim arising out of or relating to this Agreement.

Section 10. Notices.

Any notices required by this Agreement or related to the Hoosier State Service provided for under this Agreement by either party shall be in writing and shall be directed to the officials identified herein by personal delivery or by deposit in the United States mail, certified first class delivery. The representatives, and/or addresses set forth herein may be changed at any time by either party by notice in writing to the other.

For Amtrak: Chief, State Government - Contracts
National Railroad Passenger Corporation
Chicago Union Station
500 West Jackson Boulevard, 2nd Floor
Chicago IL 60661

For State: Indiana Department of Transportation
Attn: Director of Multimodal Planning and Programs
100 N. Senate Avenue, Room N758
Indianapolis, IN 46204-2216

Section 11. Entire Agreement; Amendment.

This Agreement constitutes the entire agreement between the parties with respect to the subject of rail passenger service on the route covered herein. There are no agreements, whether express or implied, except as may be expressly set forth herein. All prior agreements and understandings between them with respect to the provision of rail passenger service on the route covered herein on or after the effective date of this Agreement or any renewal thereof are subsumed within this Agreement and any renewal thereof. No change in or modification to this Agreement shall be of any force or effect unless in writing, dated and

executed by duly authorized representatives of the parties, and submitted to the Attorney General of Indiana or his or her authorized representative for approval as to form and legality.

Section 12. Construction/Governing Laws.

This Agreement shall be governed, construed and enforced in accordance with the laws of the State of Indiana, without regard to its conflicts of laws rules. Suit, if any, must be brought in the State of Indiana. The parties further agree that the Section headings used in this Agreement are for convenience only and shall not affect the construction of any terms hereof.

Section 13. Confidentiality.

State desires that Amtrak disclose to State certain proprietary and confidential commercial and financial information of Amtrak pursuant to this Agreement and the Operations provided hereunder. Except as otherwise provided in this Section 13, the State agrees to keep such confidential information in strict confidence, to maintain adequate security measures to protect the information and to immediately notify Amtrak in writing of any known or suspected disclosure, access or use of the confidential information that is not authorized under this Agreement. Further, State agrees that it and its employees, will not, either during or at any time after the term of this Agreement, publish or disclose to any third party or the public any identified Amtrak proprietary or confidential information of any kind or nature disclosed by Amtrak to State hereunder without the prior written authorization of Amtrak, except as may be required and with written notice to Amtrak prior to disclosure : (i) pursuant to the Indiana Access to Public Records Act, I.C. 5-14-3; or (ii) by order or decree of any court or other governmental body having powers to compel testimony or production of information. This Section shall survive termination or expiration of this Agreement.

Section 14. Subcontracting.

Subcontracting, assignment or transfer of all or part of the interests of the State concerning any of the obligations covered by this Agreement is prohibited without prior written consent of the State.

Section 15. Third Party Contractors.

(a.) The State may elect to contract with third parties for certain services provided by Amtrak under this Agreement, as specifically set forth below. If State elects to contract with a third party for any of the services described In Section 15(c) below, it will provide ninety (90) days prior written notice to Amtrak of its intent to issue a Request for Proposals (RFP). Amtrak will be permitted to respond to the RFP along with other proposers, who will be qualified by the State at the State's sole discretion. The State shall provide at least ninety (90) days prior written notice to Amtrak of its intention to substitute a third party contractor for any of the Amtrak provided services described below. Within forty-five (45) business days of receipt of such notice, Amtrak shall provide the State with its requirements for indemnity, insurance, labor, regulatory, health and safety obligations. Except as may be prohibited under applicable state or

federal law, the State will encourage the third party contractor to employ furloughed Amtrak employees, if applicable.

(b.) Subject to the provisions of Section 2 (e) above and as specified in Section 15 (c) below, any changes to the Hoosier State Service may, if agreed to in writing between the parties, result in an adjustment of the amounts paid by the State consistent with the Agreed 209 Methodology.

(c.) State, at its sole option, may provide any or all of the following upon completion of an RFP process and selection of a third party contractor ("Contractor"):

i. At any time during the term of this Agreement, the State may decide to introduce food and beverage service for the Amtrak Hoosier State Service. The State shall provide Amtrak with at least ninety (90) days' prior written notice of the proposed date of implementation any food service on Amtrak Hoosier State Service. Such food and beverage service to be provided by the State must meet all federal, state and local laws, rules and regulations relating to food and beverage service, including but not limited to the Food and Drug Administration and Amtrak's Food Service Sanitation and Public Health standards. Revenue generated from the State's Contractor, and any additional Amtrak costs associated with the introduction of food and beverage service aboard Amtrak Hoosier State Service will be addressed in accordance with the terms set forth in a written amendment to this Agreement.

ii. Station staffing, if a Contractor is selected by the State for any unstaffed station, will be provided at the sole expense of the State with no offset in expense, as there is presently no expense for station staffing at unstaffed stations included in this Agreement. Any and all station staffing to be implemented during the term of this Agreement shall require mutual written approval of the parties, and must, as applicable, be in full compliance with all existing Amtrak labor agreements.

iii. Rolling stock, if a Contractor is selected by the State, or if the State purchases rolling stock, such equipment will be provided at the sole expense of the State. In order for State-provided equipment to operate in the Amtrak Hoosier State Service, the rolling stock provided by the State, either through ownership or Contractor(s), must comply fully with all applicable requirements of 49 CFR Part 238 and all other applicable laws and regulations, and by mutual agreement of the parties, must be compatible with Amtrak Hoosier State operations and associated equipment. The State shall provide Amtrak with at least ninety (90) days prior written notice before the planned commencement of utilizing State-owned or leased equipment

in the operation of the Hoosier State Service. Subject to Amtrak's full acceptance of such equipment for use in the operation of the Hoosier State Service, the State shall be provided with a credit against the amounts otherwise payable under Section 3(a)(iii)(2) of this Agreement, in the amount Thirty-Five Thousand, Seven Hundred and Fifty Dollars (**$35,750.00**) per month, reflecting elimination of the Capital Cost in **Appendix III**. Such credit shall be applicable only for each full month of Hoosier State Service during which no units of Amtrak-owned equipment are provided. In the event that State-provided equipment is not available for the operation of Hoosier State Service, for any reason, and is replaced by Amtrak-owned rolling stock, the credit shall be reduced by the daily Capital Cost amount of One Thousand, One Hundred and Seventy-Five Dollars and Thirty-Five Cents (**$1,175.35**) for each such day that any unit of Amtrak-owned rolling stock is used for the operation of the Hoosier State Service.

iv. Maintenance and Servicing of State-owned or leased rail equipment, if a Contractor is used by the State, the State will be provided with a credit against the amounts otherwise payable under Section 3(a) of this Agreement, in the amount of Thirty-Nine Thousand, Two Hundred and Fifty Dollars (**$39,250.00**) per month. In the event that Amtrak must, for any reason, perform maintenance or servicing of the State-owned or leased equipment in the conduct of the daily operation of the Hoosier State Service, such credit shall be reduced by the amount of One Thousand, Two Hundred and Ninety Dollars and Forty-Two Cents (**$1,290.42**) for each such day for which mechanical forces must provide mechanical maintenance and/or servicing. All such maintenance and servicing of the State-owned or leased rail equipment to be provided by a Contractor will be provided at a non-Amtrak facility and at the sole expense of the State. The State or its Contractor shall be responsible for any host railroad access arrangements to Contractor maintenance facilities. The State shall provide Amtrak at least ninety (90) days' prior written notice prior to planned commencement of equipment maintenance and servicing by a Contractor. Further, the State shall assure throughout the term of this Agreement that the Contractor(s):

1. complies fully with all applicable requirements of 49 CFR Part 238 and all other applicable laws and regulations;
2. maintains the equipment and all components (e.g., heating and cooling systems) in safe and reliable operating condition, performs repairs as needed (including any repairs or modifications required by applicable laws and regulations) and performs housekeeping functions to provide a clean and sanitary condition on the exterior and interior of the equipment, including windows ("Operational Condition");
3. delivers the needed equipment in Operational Condition to Amtrak in a timely

fashion so that Amtrak can meet the schedule set forth in **Appendix I**;

4. agrees to defend, indemnify and hold harmless Amtrak and any railroad over which State-owned or leased equipment is operated (each an "Operating Railroad"), their respective officers, directors, employees, agents, servants, successors, assigns and subsidiaries (collectively, "Indemnitees"), from and against any and all losses and liabilities, penalties, fines, forfeitures, demands, claims, causes of action, suits, costs, and expenses incidental thereto (including costs of defense and attorneys' fees) (collectively, "Losses"), which any or all of them may hereafter incur, be responsible for or pay as a result of injury, death, disease, or occupational disease ("Personal Injury") to any person (including Contractor's employees), and for damage to or loss (including loss of use) of any property (including property of Contractor's employees and the parties hereto) ("Property Damage"), arising out of or in any degree directly or indirectly caused by or resulting from activities of or services performed by Contractor or Contractor's officers, employees, agents, servants, subcontractors, sub-subcontractors or the employees of any of them, or any other person acting for or by permission of Contractor or Contractor's agents (collectively, "Contractor's Agents"); provided however:
   (a) Contractor shall be obligated to defend and indemnify the Indemnitees for Losses as a result of Personal Injury to Contractor or Contractor's Agents, or the employees of any of them, and Property Damage to property of Contractor or Contractor's Agents regardless of cause or the negligence of State or Indemnitees.
   (b) Contractor shall not be obligated to indemnify the Indemnitees for Losses as a result of Personal Injury to Amtrak employees or property damage to property of Amtrak or Amtrak employees regardless of cause or the negligence of Contractor or Contractor's Agents.
   (c) That with respect to Losses as a result of Personal Injury or Property Damage suffered by any person or entity, other than Contractor or Contractor's Agents or State, Contractor shall not be obligated to indemnify an Indemnitee to the extent such Losses were caused by the negligence, gross negligence or willful misconduct of that Indemnitee.
   (d) Contractor's duty to indemnify and insure the contractual liabilities assumed in this Subsection 15(c) shall not exceed Two Hundred Million Dollars ($200,000,000.00) per occurrence and annual aggregate.
5. Where any lack of insurance coverage is due to the Contractor's failure to

procure or maintain insurance of the types and with the minimum limits required by Section 15(c) hereof, Amtrak shall have the right to halt the Service until such lack in insurance is cured. Contractor shall procure endorsements to its general liability policies that provide the following: (1) that Contractor's insurance carrier shall provide sixty (60) days' notice to Contractor, the State, Amtrak and the other Indemnitees before terminating, amending and/or canceling any specific coverages including endorsements required under Sections 15(c)(iv)(4) through 15(c)(iv)(6) hereof for any reason; (2) (a) if any named insured requests cancellation of insurance, Contractor's insurer shall immediately notify Contractor, Amtrak, the State and the Operating Railroads (in the manners and at the locations listed in the next sentence) of such request for cancellation, and (b) such insurance shall not be cancelled unless and until Contractor, Amtrak, the State and the Operating Railroads have given in writing their consent to such cancellation; and (3) that all notice contemplated by this Section shall be provided by certified mail, facsimile transmission, and electronic mail delivered as follows:

For the State: Indiana Department of Transportation
Attn: Director of Multimodal Planning and Programs
100 N. Senate Avenue, Room N758
Indianapolis, IN 46204-2216

For Amtrak: Cathy H. Rawlings
Director, Risk Management
National Railroad Passenger Corporation
60 Massachusetts Avenue, N.E.
Washington, DC 20002
Facsimile: (202) 906-2174
Email: cathy.rawlings@amtrak.com

For BRC: Mr. Patrick O'Brien, President
The Belt Railway of Chicago
6900 S. Central Avenue
Bedford Park, IL 60638
Facsimile: (708) 496-4001
Email: pobrien@beltrailway.com

For CSX: Mr. Jay Westbrook
AVP Network Planning & Joint Facility
CSX Transportation
500 Water Street, J-315
Jacksonville, FL 32202
Facsimile: (904) 359-4807
Email: jay_westbrook@csx.com

For Metra: Mr. Marty Ryan
Acting Chief Transportation Officer
Metra Chicago Transit
547 W. Jackson Boulevard, 5th Floor
Chicago, IL 60661
Facsimile: (312) 322-8986
Email: mryan@metrarr.com

For NS: Mr. Mark Owens
NRPC Operations Officer
Norfolk Southern Corporation
Amtrak Operations Box 158
1200 Peachtree Street, NE
Atlanta, GA 30309
Facsimile: (404) 582-5556
Email: mmowens@nscorp.com

For UP: Ms. Peggy Harris
NRPC Operations Officer
Union Pacific Railroad Company
850 Jones Street
Omaha, NE 68102
Facsimile: (402) 636-7871
Email: PEHARRIS@up.com

6. Procures and maintains, at no cost to Amtrak or any Operating Railroad, during the entire period that it maintains and/or services State-owned or leased rail

equipment, the types of insurance specified below. The Contractor shall submit to Amtrak a certificate of insurance giving evidence of the required coverages prior to commencing work. All insurance shall be procured from insurers authorized to do business in the jurisdiction where operations are to be performed. The Contractor shall require all subcontractors to carry the insurance required herein, or may, at its option, provide the coverage for any or all subcontractors and, if so, the evidence of insurance submitted shall so stipulate. The insurance shall provide for thirty (30) days prior written notice to be given to Amtrak and each Operating Railroad in the event coverage is substantially changed, canceled or non-renewed. If the insurance provided is not in compliance with all the requirements herein, Amtrak maintains the right to cease operation of the Service until proper evidence is provided. Amtrak shall be provided with copies of the applicable policies of insurance, and endorsements or (if policy copies are not available) binders adopting the same prior to October 1, 2013 unless the time for provision of same is extended by the parties. In no event will Amtrak operate the Service until it has received a copy of the contract evidencing Contractor's indemnification obligations to Amtrak and the required evidence of insurance as specified in the proceeding sentence. During the term of this Agreement the State shall provide or cause its Contractor to provide copies of policies of insurance (or if unavailable, binders adopting the same) required hereunder upon written request of Amtrak within ten (10) days or such other time as agreed to the parties.

Evidence of insurance shall be submitted to:

Cathy H. Rawlings
Director, Risk Management
National Railroad Passenger Corporation
60 Massachusetts Avenue, N.E.
Washington, DC 20002
Facsimile: (202) 906-2174
Email: cathy.rawlings@amtrak.com

Workers' Compensation Insurance:

A policy complying with the requirements of the statutes of the jurisdiction(s) in which the contract work will be performed, covering all employees of the

Contractor. Employer's Liability coverage with limits of liability of not less than One Million Dollars ($1,000,000.00) each accident or illness shall be included. General Liability Insurance

General Liability Insurance and Excess Liability Insurance:

A policy issued to and covering liability imposed upon the Contractor with respect to all work to be performed and all obligations assumed by the Contractor under the terms of its contract with the State. Products-completed operations, independent subcontractors, and contractual liability coverages are to be included, and all railroad exclusions are to be deleted. If any machinery, equipment, storage containers or anything else that has the potential for releasing contaminants (e.g., fuels, lubricants, etc.) into the environment will be brought onto the job site, the policy shall be endorsed to provide coverage for sudden and accidental pollution. Amtrak and each Operating Railroad are to be designated as additional insureds with respect to operations to be performed in connection with the Contractor's contract with the State. Coverage under this policy, or policies, shall have limits of liability of not less than Two Hundred Million Dollars ($200,000,000.00) per occurrence, combined single limit for bodily injury (including disease or death), personal injury and property damage (including loss of use) liability, with a Two Hundred Million Dollars ($200,000,000.00) annual aggregate, and a deductible/retention not exceeding Twenty-Five Thousand Dollars ($25,000.00) per occurrence to be paid by the Contractor and/or the State.

Automobile Liability Insurance:

A policy issued to and covering the liability of the Contractor arising out of the use of all owned, non-owned, hired, rented or leased vehicles which bear, or are required to bear, license plates according to the laws of the jurisdiction in which they are to be operated, and which are not covered under the Contractor's General Liability Insurance. The policy shall designate Amtrak and each Operating Railroad as additional insureds with respect to operations to be performed in connection with the Contractor's contract with the State. Coverage under this policy (or policies) shall have limits of liability of not less than Five Million Dollars ($5,000,000.00) per occurrence, combined single limit for bodily injury and property damage liability.

Property Insurance:

A policy issued to the Contractor to protect its interest in the equipment (excluding any State-owned or leased rail equipment) to be used in performance of the Contractor's contract with the State, covering all risks of physical loss or damage to such equipment. The coverage under such policy shall have limits of liability adequate to protect the value of the equipment on a replacement cost basis. Amtrak and each Operating Railroad are to be designated as additional insureds as their interests may appear and the policy shall contain a waiver of subrogation against Amtrak and each Operating Railroad, their respective employees and agents.

Pollution Liability Insurance:

A policy issued to and covering the liability of the Contractor arising out of the pollution or impairment of the environment, including costs of investigation and clean-up, caused by the performance of activity in connection with the Contractor's contract with the State. Amtrak and each Operating Railroad shall be named as additional insureds with respect to operations to be performed by the Contractor, and the policy shall contain a waiver of subrogation against Amtrak each Operating Railroad, their respective employees and agents. Coverage under this policy (or policies) shall have limits of liability of not less than Ten Million Dollars ($10,000,000.00) each claim. The Contractor may, at its option, cover this pollution liability exposure under its General Liability insurance required above, and if this is done, the certificate of insurance submitted must clearly indicate that these coverages are combined.

IF ANY LIABILITY INSURANCE SPECIFIED ABOVE SHALL BE PROVIDED ON A CLAIMS MADE BASIS THEN, IN ADDITION TO COVERAGE REQUIREMENTS ABOVE, SUCH POLICY SHALL PROVIDE THAT:

The policy retroactive date coincides with or precedes the Contractor's start of work (including subsequent policies purchased as renewals or replacements).

The Contractor will make every effort to maintain similar insurance for at least two years following project completion, including the requirement of adding Amtrak and each Operating Railroad as additional insureds.

If insurance is terminated for any reason, the Contractor agrees to purchase an extended reporting provision of at least two (2) years to report claims arising from work performed in connection with its contract with the State.

The policy allows for reporting of circumstances or incidents that might give rise to future claims.

Section 16. Employment of Department Personnel.

Amtrak shall not employ or enter into a contract with any employee of the State for purposes of fulfillment of the terms of this Agreement without the express written consent of the State.

Section 17. Representatives of INDOT. INDOT may choose to designate any employee, official, representative or agent, to act on behalf of the State in the performance of any duties or exercise of any rights under this Agreement. However, Amtrak shall have the right of approval of INDOT's selection of any consultant or contractor. Such concurrence shall be in writing and shall not be unreasonably withheld. The State agrees that any consultant or contractor to be hired by INDOT to perform any duties under this Agreement shall not be a competitor or potential competitor of Amtrak (i.e., a provider of passenger rail service). However, this Section 17 shall not be construed to apply to a third party contractor selected through an RFP process as provided under Section 15 of this Agreement.

Section 18. Status of Contractor.

Services provided by Amtrak pursuant to this Agreement shall be as an independent contractor and neither Amtrak nor any employee or agent thereof shall be considered to be an employee of the State.

Section 19. Termination Notice.

49 U.S.C. subsection 24706(a) requires that at least one hundred and eighty (180) days before "discontinuing service over a route, Amtrak shall give notice of the discontinuance in the way Amtrak decides will give a State, a regional or local authority, or another person the opportunity to agree to share or assume the cost of any part of the train, route or service to be discontinued." Because the availability of State funding upon expiration or termination of this Agreement is not now known, Amtrak and the State agree that this Section does, and will be deemed to, constitute adequate notice under 49 U.S.C. subsection 24706(a) so that the State (and/or others working with the State, such as regional or local authorities) has the opportunity to agree to share or assume the cost of continuing the service provided by Amtrak hereunder upon such expiration or termination. The State concurs with Amtrak's decision that no notice beyond this section need be given.

Section 20. On-Time Performance. In accordance with the parties' objective to provide high-quality,

on-time rail passenger services, Amtrak and the State jointly agree to undertake the following initiatives:

(a.) Amtrak and the State shall jointly work to establish annual baseline performance for the Hoosier State Service. Baseline performance shall be established for the following categories: (1) overall OTP; (2) Host Railroad responsible delay minutes; (3) Amtrak responsible delay minutes; (4) equipment related service interruptions; and (5) customer satisfaction. The parties agree to confer within sixty (60) days following execution of this Agreement to establish performance targets, including the On-time Performance target set forth in Section PRIIA 213, and thereafter, to confer not less than quarterly to review performance against baseline, and to develop/evaluate potential service and revenue improvement measures.

Section 21. Funding Cancellation Clause. In the event the Director of the Indiana Office of Management and Budget makes a written determination that funds are not appropriated or otherwise available to support continuation of Indiana's performance of its obligations under this Agreement, this Agreement shall be canceled. A determination by either Budget Director that funds are not appropriated or otherwise available to support continuation of performance shall be final and conclusive.

Amtrak may seek recovery from the State for any amounts unpaid for services rendered or goods delivered through the date of cancellation, along with all costs flowing from the cancellation, but only to the extent such costs are eligible for reimbursement under this Agreement. Actual costs incurred by Amtrak for labor protection costs as a result of termination of this Agreement shall be considered a cost eligible for reimbursement under this Agreement.

Section 22. Compliance with Laws.

(a.) The Parties shall comply with all applicable federal, state and local laws, rules, regulations and ordinances, and all provisions required thereby to be included herein are hereby incorporated by reference. If a Party violates such rules, laws, regulations and ordinances, the Party shall assume full responsibility for such violations and shall bear any and all costs attributable to the original performance of any correction of such acts. The enactment of any state or federal statute, or the promulgation of regulations thereunder, after execution of this Agreement shall be reviewed by the Parties pursuant to Section 13 above.

(b.) Amtrak represents that, to the best of its knowledge and other than as disclosed to INDOT prior to or contemporaneously with the execution and delivery of this Agreement:

(i) *Required State of Indiana Payments.* Amtrak is not presently in arrears in payment of its taxes, permit fees or other statutory, regulatory or judicially required payments to the State

of Indiana. Further, Amtrak agrees that any payments in arrears and currently due to the State of Indiana may be withheld from payments due to Amtrak. Additionally, further work or payments may be withheld, delayed, or denied and/or this Agreement suspended until Amtrak becomes current in its payments and has submitted proof of such payment to the State.

(ii) *State of Indiana Actions.* Amtrak certifies that it has no current or outstanding criminal, civil, or enforcement actions initiated by the State of Indiana pending and agrees that it will immediately notify INDOT of any such actions. During the term of such actions, Amtrak agrees that INDOT may delay, withhold, or deny work under any supplement or amendment, change order or other contractual device issued pursuant to this Agreement.

(iii) *Professional Licensing Standards.* Amtrak, its employees and contractors have complied with and shall continue to comply with all applicable licensing standards, certification standards, accrediting standards and any other laws, rules or regulations governing services to be provided by Amtrak pursuant to this Agreement.

(iv) *Work Specific Standards.* Amtrak and its contractors, if any, have obtained, will obtain and/or will maintain all required permits, licenses, registrations and approvals, as well as comply with all applicable health, safety, and environmental statutes, rules, or regulations in the performance of work activities under this Agreement.

(v) *Secretary of State Registration.* If Amtrak is an entity described in IC Title 23, it is properly registered and owes no outstanding reports with the Indiana Secretary of State. Pursuant to 49 USC 24301(b), Amtrak is authorized to do business in the State of Indiana.

(c.) *Ethics.* Amtrak and its agents shall abide by all ethical requirements that apply to persons who have a business relationship with the State of Indiana, as set forth in Indiana Code § 4-2-6, *et seq.*, Indiana Code § 4-2-7, *et seq.*, the regulations promulgated thereunder, and Executive Order 05-12, dated January 12, 2005 (collectively, "Ethical Standards"). If Amtrak is not familiar with these ethical requirements, Amtrak should refer any questions to the Indiana State Ethics Commission, or visit the Indiana State Ethics Commission website at <<http://www.in.gov/ethics/>>>. If Amtrak or its agents violate any of the Ethical Standards, INDOT may, at its sole discretion, terminate this Agreement immediately upon notice to Amtrak. In addition, Amtrak may be subject to penalties under Indiana Code §§ 4-2-6 and 4-2-7, and under any other applicable state or federal laws.

(d.) *Telephone Solicitation.* As required by IC 5-22-3-7: (1) Amtrak and any of its principals certify that (A) Amtrak, except for de minimis and nonsystematic violations, has not violated the terms of (i) IC 24-4.7 [Telephone Solicitation Of Consumers], (ii) IC 24-5-12 [Telephone Solicitations] , or (iii) IC 24-5-14 [Regulation of Automatic Dialing Machines] in the previous three hundred sixty-five (365) days, even if IC 24-4.7 is preempted by federal law; and (B) Amtrak will not violate the terms of IC 24-4.7 for the duration of the Agreement, even if IC 24-4.7 is preempted by federal law. (2) Amtrak and any principals of Amtrak certify that an affiliate or principal of Amtrak and any agent acting on behalf of Amtrak or on behalf of an affiliate or principal of Amtrak: (A) except for de minimis and nonsystematic violations, has not violated the terms of IC 24-4.7 in the previous three hundred sixty-five (365) days, even if IC 24-4.7 is preempted by federal law; and (B) will not violate the terms of IC 24-4.7 for the duration of the Agreement, even if IC 24-4.7 is preempted by federal law.

Section 23. Title VI Assurances; Non-Discrimination.

(a.) Pursuant to the Indiana Civil Rights Law, specifically including IC 22-9-1-10, and in keeping with the purposes of the Civil Rights Act of 1964, the Age Discrimination in Employment Act, and the Americans with Disabilities Act, the Parties, with regard to any work performed pursuant to this Agreement, shall not discriminate on the grounds of race, color, sex, or national origin in the selection and retention of contractors, including procurements of materials and leases of equipment. In all solicitations either by competitive bidding or negotiation made by the Parties for work to be performed under a Agreement, including procurements of materials or leases of equipment, each potential contractor or supplier shall be notified by the Party of its obligations relative to nondiscrimination in Federally-assisted programs pursuant to 49 CFR 21, which are herein incorporated by reference and made a part of this Agreement.

(b.) The Parties shall not modify work done pursuant to this Agreement in such a manner as to require, on the basis of race, color or national origin, the relocation of any persons. (INDOT's Title VI enforcement will include the following additional grounds: sex, ancestry, age, religion and disability).

(c.) The Parties shall not modify work done pursuant to this Agreement in such a manner as to deny reasonable access to and use thereof to any persons on the basis of race, color or national origin. (INDOT's Title VI enforcement will include the following additional grounds: sex, ancestry, age, religion and disability.)

(d.) The Parties each agree to comply with such federal laws, regulations, and executive orders prohibiting discrimination as are applicable to each party in the performance of their duties and

obligations hereunder. Nothing in this covenant shall be construed to imply or establish an employment relationship between the Parties.

Section 24. Severability. The invalidity of any section, subsection, clause or provision of this Agreement shall not affect the validity of the remaining sections, subsections, clauses or provisions of this contract.

Section 25. Non-Collusion. The undersigned attests, subject to the penalties for perjury that the undersigned is the properly authorized representative of Amtrak. Further, to the best of the undersigned's knowledge, neither the undersigned nor any other employee, representative, agent or officer of the Party has entered into or been offered any sum of money or other consideration, either directly or indirectly, for the execution of this Agreement other than that which appears upon the face hereof.

THE REMAINDER OF THIS PAGE IS LEFT BLANK INTENTIONALLY.

IN WITNESS WHEREOF, the parties hereto have caused this Agreement to be executed by their duly authorized representatives in multiple original counterparts as of the day and year first above written.

NATIONAL RAILROAD PASSENGER CORPORATION

Date 10/14/13

Joseph Boardman
President and Chief Executive Officer

Approved As To Form

Robin A. McCarthy
Senior Associate General Counsel
Amtrak Law Department

STATE OF INDIANA
Indiana Department of Transportation

By:

Date: 10.21.13

Karl B. Browning, Commissioner

STATE OF INDIANA
APPROVALS

Department of Administration

Date: 10/25/13

Jessica Robertson, Commissioner

State Budget Agency

for

Date: 10/28/2013

Brian E. Bailey, Director

Approved as to Form and Legality:

(FOR)

Date: 10/29/13

Gregory F. Zoeller,
Attorney General of Indiana

E

Sample Project Management Plan

Sample Project Management Plan

Vermont Agency of Transportation

May 2013

PROJECT ORGANIZATION AND MANAGEMENT

The Vermont Agency of Transportation (VTrans) owns and manages approximately 453 miles of railroad right-of-way – some 60% of all railroad right-of-way in Vermont. Of this, 305 miles is active rail that is leased to private operators. To remain viable and support for Vermont's economy, most of the rail lines require substantial work to remain in a state of good repair.

In the past decade, VTrans has invested close to $100 million on state-owned rail lines to keep them operable. System preservation is at the core of VTrans' strategy to maintain rail freight as a cost-effective shipping option for the state's industries.

This plan describes the roles and responsibilities of parties involved in VTrans rail projects, potential project risks and mitigation strategies, and project processes.

PROJECT MANAGEMENT APPROACH

The project management approach encompasses a number of experienced VTrans transportation staff and relies on contractors to support VTrans. VTrans' project management staff performs the functions necessary to maintain, monitor and verify the project schedule and budget. The management approach will include the following:

- Organization, mobilization and direction of the work.
- Execution of design, procurement and construction.
- Project controls, including cost and quality control.
- Coordination and management of the work of consultants and contractors.
- Administration and project procedures.
- Quality assurance.
- Safety and Security.
- Project Management.
- Administrative and technical support.

VTrans' Rail Section is located within the Policy, Planning and Intermodal Development (PPID) Division, and is responsible for the full range of planning, program management, project management, and technical oversight activities for rail capital projects. The Rail Section currently manages dozens of individual projects. Most recently, rail investments have focused on projects throughout the State to improve railroad state of good repair, network capacity and efficiency, and to improve vertical clearances.

In the past five years, substantial federal investments were made to Vermont's rail system. These include:

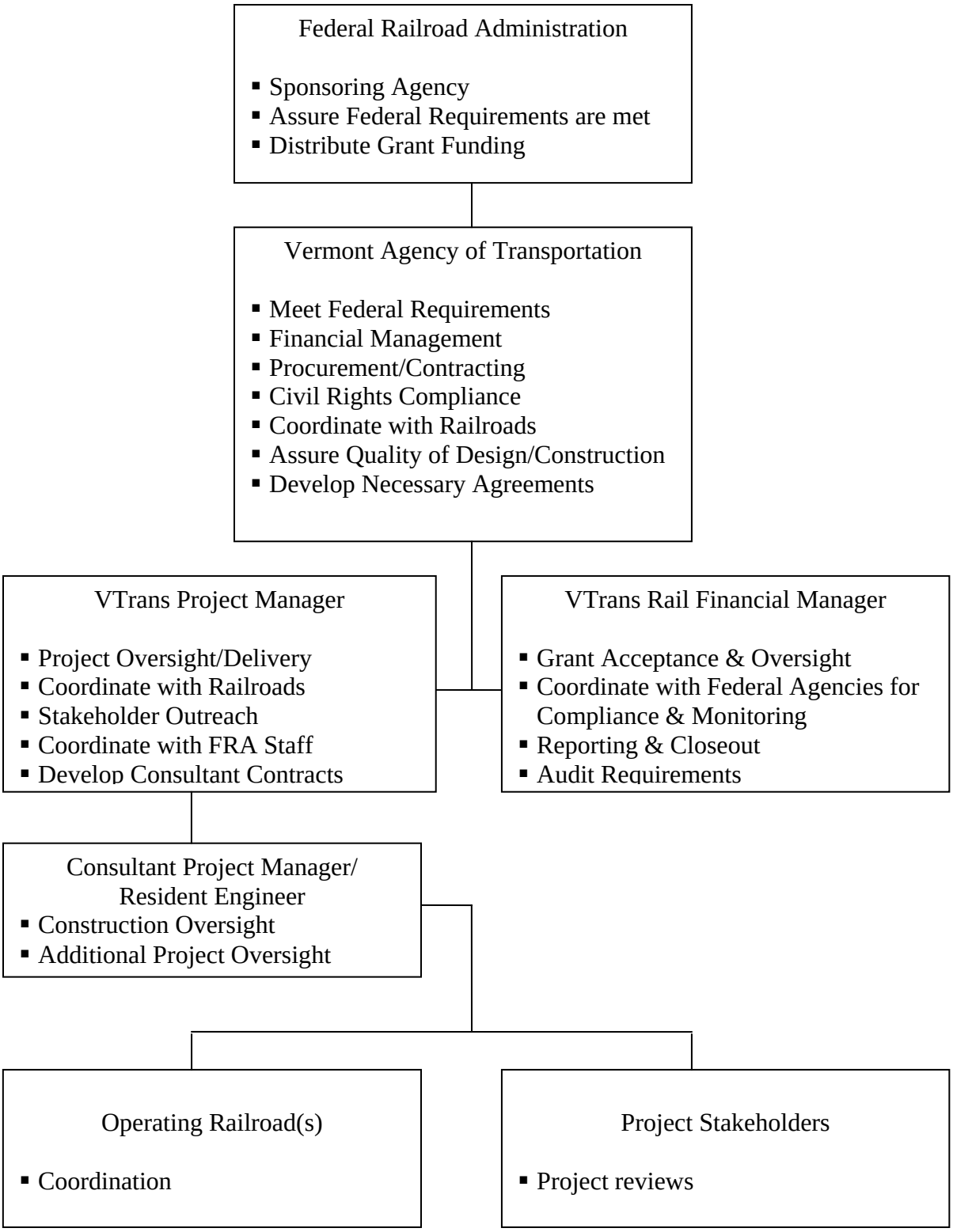
- FRA High-Speed and Intercity Passenger Rail (HSIPR) Grant – FRA Track 1 - $52.7 million for rehabilitation work along the Vermonter Amtrak service, which improved the condition of track, roadbed, grade crossings, and bridges for New England Central Railroad. The project resulted in intercity passenger trains to increase track speeds from 59 to 79 mph for 25 miles on the Palmer subdivision between milepost (MP) 144.98 and MP 170.00 and from 40 to 59 mph over the remaining 168 miles (between MP 110.5 on the Palmer subdivision and MP

132.00 on the Roxbury subdivision). The installation of the new continuously welded rail (CWR) and new turnouts as well as the elimination of temporary and permanent slow orders will reduce the Vermonter's operating schedule by 27 minutes in Vermont and New Hampshire.

- FHWA Rail Highway Crossing Hazard Elimination in High Speed Rail Corridors - $2.2 million to rehabilitate 15 crossings on the New England Central Railroad, allowing higher operating speeds for freight and passenger rail.
- U.S. DOT TIGER IV Grant- $7.9 million to upgrade 18.8 miles of railroad track between St. Albans, Vermont, and the Canadian border. The upgrades will enable the track to carry the gross rail weight standard of up to the 286,000 pounds, allowing more efficient movement of goods throughout the region and internationally.
- SAFETEA-LU Western Corridor Rehabilitation - $25 million for line improvements along Vermont's western corridor. Funds used to replace track and rehabilitate crossings and bridges.

Rail grants are assigned a VTrans rail project manager, and follow a workflow with several controls and review steps (see Figure 1). Consultant managers are used to assist with various technical tasks. VTrans will utilize third party bid solicitations for project construction. Construction reimbursement activities will be authorized by VTrans' project manager when all reviews have been completed and the contractor has met with VTrans and the rail operator. VTrans' staff and consultant manager will inspect construction activities to ensure conformance with the plans, specifications and terms of agreements.

FIGURE 1: PROJECT MANAGEMENT FLOW CHART



VTrans has experienced staff in several different divisions and units that will facilitate the project outcome. The Finance & Administration (F&A) Division houses the Agency's Budget Operations, Financial Operations, Audit Section, Contract Administration Section, and Civil Rights & Labor Compliance Section. A general overview of each unit and the number of employees within it is below:

- Budget Operations (six employees) – Oversees the budgeting process and ensures all projects have been approved by the Vermont State Legislature.
- Financial Operations (thirty-five employees) – Works with VTrans' project managers and business office mangers to ensure projects are set up in VTrans' financial systems, internal controls are met, and funds are drawn down properly.
- Audit Section (five employees) - The Audit Section provides audit assistance to agency management under the supervision of the Director of Finance and Administration. This unit provides audit assurance regarding the Agency's administration of public funds with third parties by evaluating and auditing contracts, grant agreements, utility agreements, railroad agreements and leases.
- Contract Administration Section (thirteen employees) – The primary responsibilities of Contract Administration involve the performance of the Agency's procurement and contracting functions related to construction contracts and personal service contracts; the processing of grants, cooperative and maintenance rental agreements; and the pre-qualification of construction contractors and consultants.
- Civil Rights & Labor Compliance Section (six employees) – This office is responsible for ensuring compliance with all federal and state EEO/AA and labor requirements within the Agency and on all U.S DOT funded projects.

The Rail Section consists of 15 employees, including the Rail Program Director. This section includes two areas of focus – Project Development (eight engineers and technicians) and Property Management (six employees). The Rail Projects Section, with the support of trained field inspectors through the Program Development Division (see below for a more detailed description) provides on-site visits, project monitoring, consultant oversight, and work with the operating railroad(s) to coordinate project implementation.

The following sections of the Program Development Division support project implementation: Construction Management Section where consultants and field inspectors are supervised (fourteen employees), Materials & Research Section for quality and conformance of materials used (fifteen employees located in the Materials Section only), and Permitting Sections (Right of Way, Utilities & Permits, Survey Sections and Environmental Services & Hydraulics Sections). The Permitting Sections consist of sixty employees.

PROJECT CONTROL POINTS

VTrans has several controls in place to ensure project delivery. The Agency has been successfully advertising and awarding construction projects for over 80 years and has had

a prime contractor prequalification process in place since 1951. Over the years many safeguards have been put into effect to protect the public investment in Vermont's transportation infrastructure improvement projects. Outlined below are the key steps that are used as project control points.

Monitoring

- Once a signed contract is in place with the construction contractor, the project is overseen by the Rail Section's Project Manager, supported by the Agency's Construction Division or a Consultant Resident Engineer. Any changes to the project as bid must be approved by the resident engineer and rail project manager.
- Depending on the scale and complexity of the project, additional staff may be assigned to assist the project manager and resident engineer in the day-to-day oversight of the work. The inspectors in the field monitor the contractors' work to ensure it is in conformance with the plans and specifications.
- Field inspectors are trained to ensure safe traffic control practices, enforcement of environmental regulations, and safe work practices.
- Contractors are only paid for work that meets specification and is complete and in place as determined by the Agency's resident engineer, project manager and construction staff. Bi-weekly estimates are prepared by Agency staff and are processed through a comprehensive payment processing protocol that has been developed to manage payments.
- The Agency has a separate Materials and Research Section, which inspects, samples and tests materials used on the job to ensure quality and conformance with the specifications. Many materials provided contractors also require submittal of signed and documented material certificates. These ensure that only quality materials are used on the project. In the case where "Buy America" provisions apply, this is also documented through the material certification process.
- When a project is completed the Construction Division conducts a "final inspection" during which any unacceptable or uncompleted work is noted and a punch list provided to the contractor to take appropriate action. The contractor does not receive final payment until all work has been completed to the satisfaction of the Agency.
- After a project is completed in the field it goes through a "finals" process. This is a comprehensive check of the quantities, payments and material certifications to ensure all work was properly completed.
- The Agency undergoes annual external audits of all the programs that use federal funds. These audits are designed to find discrepancies, identify areas of potential weakness, and are used to continually upgrade and improve the performance of our various monitoring and compliance systems.

FINANCIAL CONTROL POINTS

Invoice Verification

- The expenditure account (EA) and subjob are assigned. These contain most of the chartfields required for payment.
- The invoice and backup documentation is verified against the contract and/or grant document.
  - Scope of work
  - Materials
  - Payment provisions
- The invoice is verified for compliance with various federal regulations, state statutes, administrative bulletins, and agency procedures.
- Adequate funds in the budget are confirmed.

Invoice Approval

- All invoices presented for payment are approved by the following VTrans staff:
  - Project manager
  - Program manager } For contractual obligations
  - Contract manager
  - Grants management section } For financial obligations
- The approval is signified by the signature of the approver and the date approved.

Invoice Payment

- Other chartfields are assigned as needed.
  - Object detail or expense account
  - Vendor number
- The invoice is entered in the STARS accounting system used by VTrans.
- STARS is interfaced into VISION daily.
  - VISION is the statewide accounting system that generates checks.
- The interface records are reviewed daily by Financial Operations - Accounts Payable.
  - Errors are researched thoroughly and corrected in concert with the appropriate business office staff.
- The checks or electronic payments are processed by VISION.
  - VISION generates a warrant of all vouchers to be paid that day.
  - This warrant must be approved by the Commissioner of Finance & Management or his/her designee.

Monitoring & Audits

- All expenditures are reviewed monthly to assure proper coding and purpose.
- Corrections are processed by Financial Operations – Accounting.
- There is a Single Audit performed most years for the federal funds by independent auditors contracted by the State Auditor's Office
- The Transportation fund is audited annually by the State Auditor's Office.

RISK MANAGEMENT

VTrans' average annual budget is approximately $500 million. The Agency has sufficient flexibility to shift funding between projects to accommodate unforeseen cost overruns, and can also shift funding between programs if necessary. Adding to this capability is active budget monitoring process whereby finance and budget staff meet regularly with program management staff (monthly at minimum) to monitor expected costs at both a project and overall program level of detail. This careful monitoring allows us to identify in advance when and where potential budgetary adjustments may become necessary, and plan for the changes in advance to avoid sudden and more disruptive funding shifts.

Vermont also recently enacted legislation that adds infrastructure assessments to sales of motor fuels – diesel and gasoline – that are dedicated exclusively to long-term transportation infrastructure investments. These assessments have the additional advantage of serving as a dedicated revenue source to pay debt service on revenue bonds for transportation investments if necessary. The potential for issuing bonds provides additional capacity, if needed, to accommodate unforeseen project and program cost overruns.

The primary non-federal sources for Vermont's transportation budget include transportation motor fuel infrastructure funds (mentioned above) and the transportation fund. Although transportation source revenues have experienced some decline recently, the state typically seeks regular increases in motor vehicle fees – a major component of the fund – on a three year cycle. Thus revenues are regularly increased to accommodate for inflation. Moreover, to protect against annual revenues fluctuations, the state maintains a transportation fund stabilization reserve equal to five percent of the prior fiscal year level of transportation fund appropriations.

Grantee risk: State governments in general are tasked in these difficult economic times to do more with less. Vermont, and VTrans, is no exception. As such, there is a risk that VTrans will be unable to find adequate human resources to implement projects. The Agency mitigates this risk by actively evaluating business processes that can be streamlined, coordinated, or consolidated to minimize the impact of a reduced workforce. In addition, VTrans has multi-year consultant retainer contracts that can assist in managing workflow.

Funding risk: Vermont, like other states, faces the challenge of revenues not keeping pace with the demand to improve transportation infrastructure. This challenge poses a risk that sufficient funding will not be available to address growing needs. Vermont has taken several steps to mitigate this risk. Most recently, as indicated above, the new motor fuel assessments were adopted that provide dedicated additional revenues for transportation infrastructure, and also serve as a dedicated source for issuing revenue bonds if needed to assist in meeting transportation needs. VTrans takes a system-wide view of transportation problems, needs, and opportunities. The rationale is to ensure the

maximum benefit per dollar of investment, while at the same time achieving system-wide performance goals. That system-wide viewpoint is reflected in the annual budget-development process, which includes asset management, performance measures, and project prioritization as a means to maximize limited transportation dollars.

VTrans has been developing system-wide performance measures since 2001, and have become a crucial part of managing the assets and services entrusted to the Agency. Performance measures indicate the Agency's effectiveness in accomplishing its mission and highlight where shifts in funding are needed.

Schedule risk: There are several sources of schedule risk. Program timelines pose a risk that VTrans may not be able to deliver projects quickly enough to satisfy obligation and construction schedules. Permitting and other technical requirements add to schedule risk, as does the availability of contractors to bid on and complete work. VTrans can mitigate this risk by making grant projects a top priority and dedicating resources from various parts of the Agency to assist in meeting schedule concerns. An example of this is the Department of Motor Vehicles, which successfully utilized "tiger teams" to employ in areas where workloads backed up to assist in alleviating the problem quickly.

CIVIL RIGHTS AND LABOR COMPLIANCE CONTROL POINTS

VTrans has an office dedicated to enforcing all state and federal civil rights requirements. The VTrans Office of Civil Rights and Labor Compliance Section is responsible for administering all mandatory internal and external civil rights programs, including External EEO/Contractor Compliance, Disadvantaged Business Enterprise (DBE), On-the-Job Training (OJT), Davis-Bacon/Labor Compliance, Title VI, Internal EEO/AA, and ADA/Section 504. The following responsibilities are applicable to all programs:

- Development and implementation of annual program plans and updates.
- Monitoring and data collection, analysis, and reporting (monthly, quarterly, semi-annually, or annually, as required).
- Training and technical assistance.
- Investigations, audits, site visits, and/or project/contract compliance reviews.
- Enforcement.

Other requisite program responsibilities include outreach, public notice and facilitation of public participation and access, networking, assessment and evaluation.

Notice: All federal and state civil rights and labor compliance requirements are the subject of VTrans policies and contract specifications that are incorporated in all bidding and contract documents. Contractors are also placed on notice of their compliance responsibilities through the following vehicles:

- Comprehensive pre-construction letter and participation of VTrans Civil Rights staff at the pre-construction conference.

- Dissemination of Contractor Compliance manuals, checklists, and reference guides on the VTrans Civil Rights webpage, at periodic training, and during site visits and compliance reviews.

Data Collection and Reporting: The following documents and data are collected and reviewed to ensure compliance with all applicable regulations, statutes, and Executive Orders:

- Weekly certified payrolls
- Monthly payments from primes to subs
- Monthly utilization reports
- Semi-annual DBE participation data
- Semi-annual labor compliance data
- Annual DBE certification eligibility
- Annual bidders list survey
- Annual EEO survey

Monitoring and Enforcement: VTrans Civil Rights staff employ the following methods for monitoring and enforcing contractor and labor compliance on federally funded projects:

- Site visits and inspections
- Investigations
- Compliance reviews

Sanctions for Non-Compliance: VTrans contractors found in violation of civil rights and labor compliance requirements face progressive penalties and sanctions, including the following:

- Reduction, suspension, or revocation of pre-qualification status
- Withholding of periodic payments
- Debarment