2.4. RAIL NETWORK AND OPERATIONS

2.4.1. Rail Network Analysis Areas

An extensive railroad network runs through the I-87 Corridor study area, supporting both passenger and freight service between New York City, Albany and Montreal, as well as markets east and west of Albany. While the rail network somewhat parallels the highway network and in some ways handles similar transportation functions, there are stark differences in what railroads do, how they operate, and how they have to manage costs.

Highways are generally public facilities, owned and operated by public agencies. As such, they are used and shared by both commercial (trucks and buses) and non-commercial users (cars). In addition, the cost of highway maintenance and capital improvements are typically provided for through public funding sources, although some facilities generate revenues through toll collection and user fees (e.g., the NYS Thruway portion of the I-87). In contrast, railroads are generally private facilities owned and operated by private companies. While railroads are also used for the movement of both people and goods, the vast majority of the costs must be borne directly by the users, since public funding is not typically available for operating and maintenance costs. This is particularly true for rail freight operations.

Most of the railroad rights-of-way and infrastructure in the study area are owned and operated by the freight railroad companies. The freight railroads are privately owned companies that are in business to move goods by rail to earn revenues and make a profit. They are responsible for the maintenance and capital improvement costs associated with each line, and are typically responsible for train dispatching and operations on the lines they own and maintain. Passenger rail services in the study area are provided by operators who have operating agreements with the freight railroads to run passenger trains on these lines for an annualized fee. As a result, passenger trains typically operate as a “service” rather than a business venture, and they rarely earn sufficient revenues to cover operating costs.

Freight and passenger rail operators are in constant competition for the use of the rail lines and the associated costs to do so. Train capacity and operating conflicts are a daily issue between freight and passenger operators on jointly used lines, as are operating costs and revenue sharing. Since the freight companies own the rights-of-way and control who operates on their facilities, they typically have an advantage over the passenger rail operators. However, the rising sentiment within the transportation industry that passenger rail service is becoming a greater public concern is pressuring freight companies to open up their lines for increased passenger service. In return, the freight operators are asking the public sector to fund the costs of providing this capacity and the operating speeds necessary to make passenger rail service a competitive mode choice.
The rail network analyses completed as part of the I-87 Multimodal Corridor Study (“the Study”) have focused on the Study’s Primary Study area, extending from the Capital District to the U.S.-Canada border at Rouses Point. Ongoing or recently completed studies considered as part of the rail network analysis here include the following:

- **Hudson Line Study**: The Hudson Line Study was sponsored by Metro-North to investigate the feasibility of providing high speed passenger rail service along the Amtrak line between Penn Station in New York City and the Albany/Rensselaer Station in the Capital District. Elements of the study include the evaluation of capacity improvements as well as geometric upgrades to reduce travel times between the two metropolitan areas. The study is still on-going with analytical simulations being performed. No conclusions have been drawn out of the study as of this time.

- **Western New York Amtrak Opportunities Study**: “Western New York Amtrak Opportunities Study: A Market Analysis of the Cleveland-Buffalo-Toronto Corridor,” analyzed potential changes in rail passenger service reflecting changing demographic, travel, tourist and trade patterns in the Cleveland-Buffalo-Toronto Corridor. These markets are presently served by Amtrak’s Empire (NYC-Niagara Falls, NY), Maple Leaf (NYC-Toronto) and Lake Shore Limited (Chicago-Boston/NYC) routes, with supplemental Toronto-Niagara Falls, Ontario service provided by VIA Rail Canada. The potential for service to southwestern New York State, including weekend service to southern tier ski areas, was also assessed, along with expanded full corridor service and better integration with the Northeast Corridor. Minimal changes in service have resulted to date from the study, primarily due to the overall precarious state of Amtrak operations.

Since there are a variety of studies, some of them on-going, analyzing freight operations between New York City and Albany, no further assessment of rail freight operations in that part of the corridor was performed as part of the Study. Further, rail freight operations in the Canadian portion of the corridor are being addressed separately by a variety of provincial and national agencies, and by the rail operators themselves, and are not discussed in this Study. However, all relevant results of studies being performed in the U.S. and Canadian portions of the Secondary Study Area were considered in the Study’s assessment of critical rail infrastructure needs.

### 2.4.2. Existing Rail Operations in the Corridor

The freight railroad companies that provide service in the Primary Study Area include the following:

- CP Rail Systems
- CSX Transportation
- Guilford Transportation
RAIL NETWORK AND OPERATIONS

- Albany Port Railroad
- Vermont Railway
- Battenkill Railroad

These are privately owned companies that typically earn revenues by moving freight over their tracks. However, they can also earn income by charging third parties for the use of their railroad right-of-way. For example, telecommunication companies have invested in the installation of fiber optic cables along railroad rights-of-way because it provides a continuous and relatively secure corridor for their infrastructure.

The passenger and tourist railroads that operate in the study area include Amtrak, Upper Hudson River Railroad (Warren County), and Battenkill Railroad. Passenger railroads in the Primary Study Area consist of both publicly and privately owned companies that provide passenger rail service or operate excursion trains to support business travelers and tourists within the study area. The following sections address present rail infrastructure conditions and operations throughout the Study Area.

- **Freight Rail Network**

The freight rail network in the Primary Study Area consists of Class 1 railroads, regional railroads, short lines and terminal operators. Each of these rail operators are interconnected in an international freight network that moves raw materials and finished products to and from industries, transloading facilities, ports, and other railroads throughout the Northeastern United States and Canada, as well as abroad. Overviews of each of the freight rail carriers in the I-87 Corridor are presented below, including a brief summary of their rights-of-way, infrastructure, and operations in the study area. The freight rail lines and facilities in the study area are shown in Exhibits 2.4-1 through 2.4-7.

**CP Rail Systems**

CP Rail (CPR) owns and operates the former Delaware & Hudson Railway (D&H) tracks that run between Montreal and Albany along the I-87 Corridor.

**Major System Components.** The CPR main track in the Primary Study Area is called the Canadian Main and runs from Rouses Point at the Canadian Border (Mile Post [MP] 190.6) to Glenville just north of Schenectady (MP 21.7). From there, it links to the Canadian Connector and the Freight Main that goes from Schenectady to Binghamton, Scranton and points south (see Exhibits 2.4-1 through 2.4-7 for these rail segments).

The Canadian Main is primarily a single-track mainline with only 16 miles of passing sidings in
the 170-mile corridor. The alignment north of Fort Edward runs along the Champlain Canal and Lake Champlain. It is predominantly a signalized track with a maximum operating speed of 40 miles per hour (MPH) for freight trains and 70 MPH for passenger trains (Amtrak). However, the rugged terrain and mountainous topography that these lines must traverse limit the maximum operating speeds in many areas.

Other CPR lines through the Primary Study Area include the Freight Main from Schenectady to Binghamton, the Colonie Main from Albany to Mechanicville, the Adirondack Branch from Saratoga to Corinth, the Plattsburgh Running Track, the Glens Falls Running Track, and the Voorheesville Running Track from Albany to Delanson (currently out-of-service). These are all basically single-track lines with some signalization and maximum operating speeds of 40 MPH for main tracks to 10 MPH for running tracks.

Yards, Terminals and Commodity Flows. The major yards and terminals on the CPR are located in Plattsburgh, Whitehall, Fort Edward, Saratoga, Mohawk and Albany. Most of the freight traffic running on CPR between Montreal and Albany consists of wood pulp, lumber, plastics, chemicals, coal, and containers.

Some of this traffic has origins and destinations on CPR lines, but most of it is considered to be “bridge” traffic - carloads of cargo which one railroad or a shipper gives to CPR at the beginning of the trip and CPR gives to another railroad before the shipments reach their final destination for unloading. The profit margins on “bridge” traffic are not very high because the originator or the receiver of the shipment pays most of the fees. Therefore, the “bridge” carrier only gets a portion of the originating or terminating railroad’s revenues.
Exhibit 2.4-1
Freight Rail Network
Exhibit 2.4-2
Freight Rail Network

Legend
- CP Rail Systems
- CSX Transportation
- Guilford Transportation
- Vermont Railway
- Battenkill Railroad
- Other Rail Lines
I-87 Multimodal Corridor Study
Exhibit 2.4-3
Freight Rail Network

Legend
- CP Rail Systems
- CSX Transportation
- Guilford Transportation
- Vermont Railway
- Battenkill Railroad
- Other Rail Lines

(See Exhibit 2.3-2)
Exhibit 2.4-4
Freight Rail Network

Legend:
- CP Rail Systems
- CSX Transportation
- Guilford Transportation
- Vermont Railway
- Battenkill Railroad
- Other Rail Lines
Exhibit 2.4-6
Freight Rail Network

Legend
- CP Rail Systems
- CSX Transportation
- Guilford Transportation
- Vermont Railway
- Battenkill Railroad
- Other Rail Lines

I-87 Multimodal Corridor Study
Exhibit 2.4-6
Freight Rail Network
Freight Traffic. CPR operates as many as 14 through-freight trains per day on the Canadian Main and 6 trains per day locally at their support yards and terminal locations. The yards and terminals along the Canadian and Freight Mains are located in the following areas:

- Plattsburgh (Plattsburgh Airbase Redevelopment Commission)
- Ticonderoga (International Paper)
- Whitehall (Connection with the Vermont Railway/CLP)
- Fort Edward (Connection to Glens Falls)
- Saratoga (Connection to the Adirondack Branch)
- Schenectady (Connection to Guilford Transportation/STR)
- Albany (Connection to the Port of Albany/APRR)

Freight trains between Albany and Montreal can operate at a maximum of 40 MPH. However, speeds typically average about 30 MPH over the 175-mile trip from Albany to Rouses Point, which currently takes about 9 hours. Customs and Immigration can add additional time to the trip, and the last leg from the border to Montreal typically takes about 1.5 hours. Southbound trains from Montreal to Albany also make the 205-mile journey in about 11 hours.

Current Conditions and Planned Improvements. The current condition of the Canadian Main is fair to good depending on the topography and operating requirements on each segment. However, there are several temporary speed restrictions (or “slow orders”) due to local track conditions that can affect trip times for both freight and passenger trains. Currently, there are between 35 and 40 miles of slow orders resulting in approximately one hour of delay.

While The CP Mainline tracks could accommodate more capacity, they are constrained by operation elements. Freight runs are “unscheduled” and run on the tracks when they are ready to go, while Amtrak runs on or about a published schedule competing for the same tracks. When trains are on the tracks at the same time, delays can occur and the limited number of passing sidings create at-capacity conditions.

Key operational “choke points” facing CP Railway today include the following:

- Saratoga Yard MP 55.50: Currently, conflicts exist between Amtrak and freight yard activities (yard switching). When passenger trains arrive, switching must stop to permit Amtrak to transit the yard. The present operation has a negative impact on the productivity of Saratoga yard. The creation of a by-pass rerouting the Canadian main line to the West side of Saratoga yard would alleviate problems as they exist.
- Passing Siding (controlled siding) at MP 99.00: Current capacity (4,900’) insufficient to hold long trains, need to increase length of siding additional 10,000’+/-.
- Border at Rouses Point MP 189.39: Slow speeds and single track create major train traffic delays.

CPR has an ongoing capital improvement program to try to enhance operating conditions and reliability. In addition to correcting the previously mentioned slow order conditions, the focus of the capital program is to improve operations by replacing ties and surfacing the track, replacing jointed rail with continuous welded rail, upgrading the signal and grade crossing warning systems, and adding passing sidings.
whenever possible in order to increase capacity and operating flexibility on the single track mainlines.

The first step in a progressive program to upgrade the track would be to replace failed crossties with new ties and then raise and surface the track (similar to a milling and re-paving project on a highway). This strengthens the foundation of the track structure and eliminates the track surface defects that would necessitate temporary slow orders.

The next major step would be to replace the jointed rail with continuous welded rail (CWR). Rail joints are the weakest part of the track structure and the focal point for defects that necessitate temporary speed restrictions. By eliminating the rail joints, the track is not only smoother with less surface defects, but performs more resiliently by eliminating the dynamic loadings and impacts caused by freight trains traveling over rail joints.

In order to increase operating speeds, the signal and grade crossing warning systems would also have to be updated and calibrated for higher passenger and freight train speeds. In addition, warning systems need to be added to unprotected grade crossings to reduce the risk of an accident as higher train speeds are planned.

These are critical steps in the plan to increase allowable speeds for passenger trains while maintaining tracks that are subjected to freight train traffic.

A vertical clearance program (relevant primarily to freight operations) has been funded for the Canadian Mainline. This program will permit the movement of second generation (railcar height of 20’-2”) double container stack traffic, focusing on areas like the Fort Ticonderoga and Willsboro tunnels, the through-truss rail bridges over the Ausable and Boquet Rivers, and removal of the out-of-service signal bridge at Port Henry. Plans to replace two bridge structures (Clinton and Saunders/Division Streets) over the Canadian Main Line in Whitehall are also included. Appendix 5 graphically shows the locations within the corridor where there are rail vertical clearance issues.

Without these foundation projects in place, any incremental upgrades in capacity or speeds would not be feasible. In general, about 50% of the track maintained by CPR on their primary lines is welded rail, and the other 50% is jointed rail. On the Canadian Main about 80% of the jointed rail is located between Schenectady and Port Henry.

**CSX Transportation**

CSX Transportation (CSX) owns and operates the former Consolidated Rail Corporation (Conrail) trackage that runs between Albany and New York City along both sides of the Hudson River. CSX also owns the rail lines east of Albany to Boston and west of Albany to Buffalo (see Exhibits 2.4-6 and 2.4-7 for the location of the CSX alignments within the study area).

**Major System Components.** The line on the east side of the Hudson River between Albany/Rensselaer and New York City is called the Hudson Subdivision. It runs from Poughkeepsie (MP 75.5) to Hoffmans west of Schenectady (MP 169.9), where it connects with the Selkirk Subdivision.
and the line that goes from Amsterdam to Selkirk. The Hudson Subdivision is a double-track mainline from Poughkeepsie to Rensselaer, and a single-track mainline with passing sidings between Rensselaer and Hoffmans. It is a signalized track with a maximum operating speed of 50 MPH for freight trains and 110 MPH for passenger trains (Amtrak). South of Poughkeepsie, the Hudson Subdivision is owned and maintained by Metro-North Railroad (MNR), it is primarily a double and triple tracked line.

The line on the west side of the Hudson River between the Albany area and the New York City - Northern New Jersey area is called the River Subdivision. It runs from Selkirk (MP 132.6) to North Bergen (MP 2.0), where it connects with high-density rail terminal and port operations in Northern New Jersey. The River Subdivision is mainly a single-track mainline with passing sidings between Selkirk and North Bergen. Double tracking exists along this line between West Nyack and North Bergen. It is a signalized track with a maximum operating speed of 50 MPH for freight trains. No passenger trains currently operate on this line.

Other CSX lines through the Primary Study Area include the following:

- Castleton Subdivision from Selkirk to Schodack;
- Berkshire and Post Road Subdivisions from Schodack to Boston;
- Schodack Subdivision from Schodack to Stuyvesant;
- Port Subdivision from Selkirk to the Port of Albany; and
- Carman Subdivision from Schenectady to Hoffmans.

These are all essentially single-track lines with passing sidings and signalization. The maximum operating speeds typically range from 50 MPH for the main tracks, to 30 MPH for the secondary tracks.

**Yards, Terminals and Commodity Flows.** The major yards and terminals on CSX in the Primary Study Area are located in Selkirk, West Albany, and South Schenectady. Selkirk is the largest and most vital location.

Freight traffic running on CSX to points east, west and south of Albany includes nearly every type of commodity currently moving by rail. Some of the higher volume or more sensitive shipments include automobiles, chemicals, unit trains (grain, oil, coal), and containers (trailer-on-flatcar, container-on-flatcar, and double stack containers). Most of this traffic originates and terminates on CSX lines, but CSX also interchanges traffic with every other freight rail operator in the Primary Study Area.

**Freight Traffic.** CSX operates 4 freight trains per day on the Hudson Subdivision, 34 trains per day on the River Subdivision, and 28 trains per day on the Berkshire/Post Road Subdivisions. CSX also operates 6 trains per day on the Port Subdivision, including 2 CP Rail trains. All of these CSX trains either originate or terminate at Selkirk.

**Current Conditions and Planned Improvements.** The current condition of the CSX trackage is good to excellent depending on the traffic and operating requirements on each segment. The CSX trackage in the Primary Study Area is almost 100% welded rail with the exception of jointed rail on the Carmen Subdivision.

CSX has an ongoing capital improvement program to keep their lines in the best possible
condition. There currently are several double tracking projects planned on their single track mainline south of Albany (River Subdivision) in order to increase capacity and operating flexibility in congested areas.

Guilford Transportation

Guilford Transportation Industries (GTI) and their subsidiary, Springfield Terminal Railroad (STR), currently owns and operates the former Boston & Maine Railroad (B&M) trackage that runs between Schenectady and Boston through the Primary Study Area (see Exhibits 2.4-5 and 2.4-6 for the location of the GTI alignments within the study area).

The GTI main track in the Primary Study Area is called the Fitchburg Mainline. It runs from Schenectady (MP 467.5) to the Massachusetts State Line (MP 435.5) where it continues eastward to Boston.

The Fitchburg Mainline is primarily a single-track mainline with passing sidings. It is predominantly a signalized track with a maximum operating speed of 50 MPH for freight trains. No passenger trains currently run on this line.

Yards and Terminals. The major yard on GTI in the Primary Study Area is located in Rotterdam Junction.

Freight Traffic. GTI operates 12 freight trains per day on the Fitchburg Mainline and 10 trains per week locally at their support yards and terminal locations.

Through trains between Mechanicville and Boston can operate at a maximum of 50 MPH, but typically average about 30 MPH.

GTI connects with CPR in Crescent and Mechanicville, with the Battenkill Railroad in Eagle Bridge, and with the Vermont Railway at Hoosick Junction. The Guilford Hudson River Bridge in Mechanicville is one of only three rail crossings over the Hudson River (the other two are CSX’s bridges in Rensselaer and Castleton).

Current Conditions and Planned Improvements. The current condition of the Fitchburg Mainline is fair to good depending on the topography and operating requirements on each segment. However, there are several temporary slow orders due to local track conditions that can affect trip times for freight trains.

In addition to correcting slow order conditions, the focus of the capital program is to improve operations by replacing defective crossties, surfacing track, replacing jointed rail with continuous welded rail, and adding passing sidings where possible in order to increase capacity and operating flexibility on the single track main.
Albany Port Railroad (APRR)

The Albany Port Railroad (APRR) is a terminal railroad that is jointly owned by CPR and CSX. The APRR operates the trackage that serves and supports the industries and transloading facilities located at the Port of Albany. APRR connects with CPR's Colonie Main and Kenwood Yard to the north and with CSX's Port Subdivision and Selkirk Yard from the south (see Exhibit 2.4-6 for the location of the APRR facilities within the study area).

APRR is a terminal railroad with several yard tracks, processing plants and transloading facilities that provide large-scale intermodal connectivity with ships and trucks for both inbound and outbound shipments.

Freight Traffic. APRR operates several inbound and outbound freight trains per day and one yard switcher per day at their terminal and port facilities. The primary commodities handled by APRR at the port include grain, corn, molasses, animal feed, wood pulp, oil products, steel, and generators.

These commodities primarily come inbound to the port via rail. Domestic shipments typically go outbound by truck and international shipments go outbound by barge or ship. However, some commodities (e.g. oil products) come inbound by barge and are transloaded to rail for outbound shipments.

Current Conditions and Planned Improvements. The current condition of the APRR tracks is fair to good depending on the operating requirements on each segment. The Shed Storage Tracks were recently rehabilitated in order to increase capacity and reliability in this area. In addition, APRR implemented several capital improvement projects including the installation of a yard air distribution system that permits pre-air brake tests to be performed prior to pick up by CPR or CSX. Another project funded by NYSDOT that provided increased rail business to the port was a clearance improvement project on CPR between GE-Schenectady and the Port of Albany in order to allow the transport of electric generators by rail.

Vermont Railway

The Vermont Railway (VTR) and their subsidiary, the Clarendon & Pittsford Railroad (CLP), currently operate over the trackage that runs from Whitehall to Rutland, Vermont and from Hoosick to North Bennington, Vermont within the Primary Study Area (see Exhibit 2.4-4 for the location of the VTR alignments within the study area).

The VTR operated main track in the study area is called the CLP Rutland Mainline. It runs from CPR's Canadian Main in Whitehall (MP 77.3) to VTR's Mainline in Rutland (MP 101.5). The CLP Rutland Mainline is primarily a single-track without passing sidings. It is predominantly a non-signalized track with a maximum operating speed of 40 MPH for freight trains and 60
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MPH for passenger trains (Amtrak).

The VTR also operates the Hoosick Section that runs from Hoosick Junction on the STR Freight Mainline to the New York State Line and to North Bennington, Vermont. While VTR operates freight trains over these lines in the Primary Study Area, the State of Vermont actually owns the rights-of-way and railroad infrastructure.

Freight Traffic. VTR operates 6 freight trains per day on the Rutland Mainline and connects with CPR at Whitehall. Freight trains between Whitehall and Rutland can operate at a maximum of 40 MPH, but typically average about 30 MPH. VTR does not currently operate any freight trains between Hoosick Junction and North Bennington, although there have been several capital improvement projects on this line recently in anticipation of future rail service.

Current Conditions and Planned Improvements. The current condition of the CLP Rutland Mainline is good and VTR has an ongoing capital program to try to keep the line in the best possible condition.

- Passenger Rail Network

The passenger rail service network in the Primary Study Area consists of Amtrak and some tourist train and excursion operators that operate predominantly over freight railroad trackage or rail corridors owned by public agencies. Intercity passenger rail service is provided by Amtrak and operates on regular daily schedules year round, with seasonal peaks such as the additional trains to Saratoga during the racing season. Excursion trains operate on a more limited, seasonal basis.

Overviews of each of the passenger rail carriers in the I-87 Corridor are presented in this section, including a brief summary of their rights-of-way, infrastructure, and operations in the Primary Study Area. Maps showing the passenger rail operations in the Primary Study Area are also included in this section (see Exhibits 2.4-8 through 2.4-14).
Exhibit 2.4-10
Passenger Rail Network

Legend
- Amtrak Operated (Owned)
- Amtrak Operated (Not Owned)
- Upper Hudson River Railroad
- Battenkill Railroad
- Other Rail Lines
Exhibit 2.4-12
Passenger Rail Network

Legend
- Amtrak Operated (Owned)
- Amtrak Operated (Not Owned)
- Upper Hudson River Railroad
- Battenkill Railroad
- Other Rail Lines
Exhibit 2.4-13
Passenger Rail Network

Legend
- Amtrak Operated (Owned)
- Amtrak Operated (Not Owned)
- Upper Hudson River Railroad
- Battenkill Railroad
- Other Rail Lines
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Exhibit 2.4-14
Passenger Rail Network

Legend
- Amtrak Operated (Owned)
- Amtrak Operated (Not Owned)
- Upper Hudson River Railroad
- Battenkill Railroad
- Other Rail Lines
As noted in the Introduction of this report, a Pre-Feasibility Assessment of High Speed Rail (HSR) Service in the New York City – Montreal Corridor (“HSR Study”) is also being completed as part of this Study, in cooperation with the Québec Transportation Ministry (MTQ). The HSR Study includes a preliminary look at the viability of implementing true European-type high-speed service (150+ MPH throughout), as well as various incremental improvements to the existing alignment and to New York-to-Montreal passenger rail service. MTQ is looking at similar HSR service between Montreal and the U.S.-Canadian border. The segment from New York City to Albany, part of the Empire Corridor already designated as a High Speed Rail Corridor, has been addressed by previous projects and studies. The remaining section – from Albany to the U.S.-Canadian border – is the focus of the HSR Study, the results of which will be included in the High Speed Rail Pre-Feasibility Study report to be released separately.

**Amtrak**

As indicated by the map below, existing intercity passenger rail service in New York State consists of three service routes, each of which is discussed in greater detail below:

- Empire Corridor from New York Penn to Albany to Buffalo/Niagara Falls, of which one train goes on to Toronto
- Adirondack Corridor from New York Penn to Albany to Montreal, which is state-subsidized from Albany to Montreal
- Lake Shore Limited which provides long distance service from New York Penn to Albany, and then to Chicago with a segment to Boston

The major terminal in the Study Area for Amtrak is located in Rensselaer where there is a locomotive and car repair shop as well as maintenance and storage facilities.
• **Empire Corridor.** The Empire Corridor lies entirely within New York State, generally extending from Niagara Falls 22 miles along the Niagara Branch to Buffalo, east along the Chicago Line, 298 miles to Albany, and then south along the Hudson Line, 142 miles to Penn Station in New York. CSXT is the primary owner of the Empire Corridor infrastructure. The southern most 75 miles on the Hudson Line between Poughkeepsie and New York City are either owned by the MTA Metro North Commuter Railroad or Amtrak. Although it was not until 1996 that TEA-21 officially designated the Empire Corridor as a high-speed corridor, this corridor is the first in the nation outside of the Northeast Corridor to operate at speeds up to 110 mph service between New York City and Albany since 1979. Amtrak has provided service on this route since its beginning, and ridership has been growing rapidly in recent years (by one third in 5 years: 978,000 to 1.3 million).

The Empire Corridor connects at New York Penn to the Northeast Corridor, to Boston from Albany-Rensselaer Station, Montreal from Schenectady Station (the Adirondack), and to Chicago from Buffalo (the Lake Shore Limited) and to Toronto from Niagara Falls (the Maple Leaf).
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Existing Corridor Conditions & Opportunities

- **Adirondack Corridor.** The Adirondack Corridor stretches from New York Penn to Montreal. The portion along the Hudson River to the Capital District is considered part of the Empire Corridor, and therefore is part of the overall Amtrak national system. The 240 mile long Adirondack service to Montreal from the Albany-Rensselaer Station is not part of the overall Amtrak system but is supported by a New York State contribution toward its operating subsidy. Canadian Pacific Railroad (CPR) owns and maintains the track in New York north from Schenectady Station (its Canadian Mainline); at Rouses Point, the Adirondack switches to Canadian National (CN) track for its move into Central Station in Montreal.

This service is important in terms of tourism and economic development, and provides rail passenger service to residents of the Adirondack area through the connection to Montreal.

In August 2000, this service was named one of the top ten best train trips in the world by National Geographic Traveler magazine. New York State DOT has been involved with Amtrak in marketing and promoting the service.

In addition, Vermont supports the Ethan Allen. Similar to the Adirondack, it originates in New York Penn, but is subsidized north of Albany, running on track in New York State (from Whitehall, the Ethan Allen travels east to Rutland.)

- **Lake Shore Limited.** The Lake Shore Limited is an Amtrak long distance train. Its main endpoints are New York Penn and Chicago. The eastbound train “breaks” at the Albany-Rensselaer Station, with the main train continuing on to New York Penn, and a portion going to Boston. Heading west, the portion from Boston connects at Albany-Rensselaer to the Lake Shore which then continues on to Chicago. This station dwell time increases the Lake Shores total NY Penn to Buffalo time.
**Number of Trains.** There are thirteen trains that provide roundtrip service to the Hudson Valley between New York Penn and Albany-Rensselaer Station. Seven of these trains are specific to the Hudson Line, while four continue on west. Three of these four are Empire Corridor trains while the fourth is the Lake Shore Limited. Each of the Empire Corridor trains goes on to Niagara Falls with one, the Maple Leaf, providing service to Toronto.

Of the thirteen trains heading north from New York Penn, two are the state supported trains: New York's Adirondack and Vermont's Ethan Allen. The state supported portions are north of Albany. Both provide service to Saratoga. As noted above, the Adirondack continues on to Montreal. The Ethan Allen currently goes to Whitehall on the Adirondack Corridor; then branches off to go to Rutland, VT.

Passenger train operations and schedules may vary based on seasonal peaks and market conditions in order to optimize ridership and fare revenues. One example is the additional service to the Saratoga Springs station during the racing season, which results in approximately 1,200 additional passengers.

**Travel Times.** Travel between New York Penn and Albany-Rensselaer Station averages 2 hours and 25 minutes, and is relatively on-time. Travel to Buffalo-Depew takes 4 hours 50 minutes from the Capital District; to the downtown Buffalo-Exchange Street Station, just over five hours. Between Buffalo and the Capital District, service is not as reliable, with the eastbound Lake Shore Limited being notoriously late. One of the key components affecting all trains that is in the Amtrak-New York State program agreement, is the single track segment from Schenectady to Albany-Rensselaer Station. Along with the Livingston Avenue Bridge over the Hudson River, this represents a major statewide bottleneck for Amtrak service.

Note that the dwell time at the Albany-Rensselaer Station to break or add-in the Boston extension increases the Lake Shore Limited’s schedule. Together with other schedule requirements, the scheduled travel time from NY Penn to Buffalo-Depew is 5:47.

As with regular service between New York Penn and Albany, the Adirondack train is a fairly reliable 2:25. From Albany north, scheduled travel time is 7 hours and 20 minutes, with arrival in Montreal ranging from on-time to two or more hours late. This means that from New York
Penn to Montreal (over 50% of the Adirondack ridership), the trip is a scheduled 9 hours and 45 minutes, but could take close to twelve hours.

**Competition with Other Modes.** At present, rail travel in the Empire Corridor between New York City and the Capital District is fairly competitive with automobile travel. Current rail travel time is 2 hours, 25 minutes for the 140 mile trip, but that is directly to Penn Station in Manhattan, with direct connections to the subway and commuter rail networks. By auto, either the NYS Thruway or the Taconic State Parkway can get one to New York City in two hours; however, driving into New York City entails congested bridges and tunnels, as well as limited, high cost parking. From Albany to Buffalo-Depew, current scheduled rail travel time is 4 hours, 50 minutes, but this is often subject to delays. Automobile travel via the NYS Thruway can take only 4 and 1/2 hours at 65 mph, with clean, modern rest areas for the 290 mile trip.

When compared to air travel, rail travel between New York City and Albany is still competitive. Approximate flight time between New York City and Albany is one hour (non-jet service); however, security check in, parking, traffic congestion, and travel time from JFK or LaGuardia to Midtown Manhattan could add another 2 hours to the trip. Air travel time between NYC and the upstate cities of Syracuse, Rochester and Buffalo has recently become more competitive with the introduction of low cost providers such as Jet Blue, which provides frequent daily flights with a one hour 20 minute travel time to Buffalo.

**Track Ownership and Control.** As mentioned in previous sections, the National Rail Passenger Corporation (Amtrak) typically does not own the tracks or rights-of-way that they operate over. Most of the tracks Amtrak uses across the country are owned, operated and maintained by freight railroads. However, within the Study Area, Amtrak does own and maintain certain sections of track, but train movements on these segments are still controlled by CSX Transportation.

One section of track that Amtrak owns and maintains is the Hudson Subdivision from the connection with CSX at Hoffmans (MP 169.9) to just west of Schenectady (MP 161.4). Amtrak also owns, operates and maintains the Post Road Branch from Rensselaer (MP 199.5) to Castleton (MP 187.5). Track segments that Amtrak operates and maintains, but does not own, include the Hudson Subdivision west of Schenectady (MP 161.4) to Rensselaer (MP 140.0), and the Hudson Subdivision from Rensselaer (MP 140.0) to the connection with CSX at Stuyvesant (MP 125.5).

The Hudson Subdivision between Hoffmans and Rensselaer is a single-track mainline with passing sidings. It is a signalized track with a maximum operating speed of 50 MPH for freight trains and 110 MPH for passenger trains. The Hudson Subdivision between Rensselaer and Stuyvesant is a double-track mainline with an automated traffic control system and a maximum operating speed of 50 MPH for freight trains and 110 MPH for passenger trains. The Post Road Branch between Rensselaer and Castleton is a single-track mainline with an automated signal system and a maximum operating speed of 79 MPH for passenger trains (no freight trains use this track).

**Operating Speed Differential: Freight vs. Passenger.** One of the primary issues that must be considered in a shared rail corridor is the maximum operating speed for passenger trains vs. the maximum operating speed for freight trains. This speed is significant for several reasons.
It affects operating capacity and flexibility. For example, high speed passenger trains operating with relatively slow freight trains in a single track corridor is similar to cars following and trying to pass trucks on a two lane road in mountainous terrain.

There are incremental cost associated with allowing passenger trains to travel at higher speeds than freight trains over a given section of track. The greater the difference in the maximum speeds between passenger and freight, the greater the cost of the incremental maintenance.

The critical factor in determining future capital improvement programs to reduce trip times is not necessarily the maximum operating speed, but the average operating speed. Increasing average operating speed is the first objective in an incremental rail service improvement program because it will often yield more benefits than increasing maximum operating speed in a given corridor.

Current Track Conditions and Planned Improvements. The current condition of the Amtrak trackage is good to excellent. There is currently a double tracking project planned on the single-track main between Albany and Schenectady in order to increase capacity and operating flexibility between freight and passenger operations in this congested area.

NYSDOT and CPR have agreed on a $25 million program of short-term capital improvements between Schenectady and Rouses Point, New York, some of which were discussed above. The intent is to complete these track and signal improvements, primarily on the Canadian Main Line, by the end of 2005. These include track improvements (e.g., installation of relay rail, new crossties and switch ties, etc.); improvements to bridges, culverts and grade crossings; and a rail grinding program along the corridor. The goals of the program are the following:

- Reduce long-term speed restrictions at a minimum of 10 locations along the corridor;
- Improve passenger & freight train safety and on-time performance;
- Reduce passenger train delays by increasing track speeds to over 65 MPH on the passenger corridor, where permissible; and
- Reduce passenger train delays caused by freight trains.

A variety of signal and communication improvements are scheduled, including upgrades to signals and related facilities to reduce passenger and freight train delays due to signal failures. Improvements to the radio voice communication system will also increase train safety, as will actions to upgrade signal system reliability at automated grade crossings.

A variety of changes to tracks and controls at the Saratoga Station will permit a northbound Amtrak passenger train to continue at track speed on the Main Track, and then use new crossovers to the 30 MPH Running Track to make the station stop. These changes will reduce passenger train running times and allow northbound and southbound passenger trains to be in the station at the same time without affecting the Main Track, and reduce interference between the passenger train operations and freight switching operations in Saratoga Yard.

Upper Hudson River Railroad (UHRR)
The Upper Hudson River Railroad (UHRR) operates and maintains, but does not own, the former Delaware & Hudson Railway (D&H) Adirondack Branch from North Creek (MP 95.0) to Riparius (MP 87.0). UHRR operates a seasonal 2-hour round trip excursion train service along
an 8.5-mile section of the former Adirondack Branch of the D&H Railroad. Warren County currently owns the railroad infrastructure and rights-of-way from North Creek (MP 95.0) to Corinth (MP 55.7) in Saratoga County. However, the section of track from Riparius to Corinth is currently out-of-service (see Exhibits 2.4-11 and 2.4-12 for the location of these rail sections.

The entire line is a single-track mainline with no signal system and a maximum operating speed of 10 MPH for passenger trains. No freight trains currently use this section of track.

**Current Rail Operations.** The UHRR operates an excursion passenger service between North Creek and Riparius. Typically, 30 passenger trains per week operate on this segment during the summer and 12 trains per week during the fall. During the winter and spring, there are typically no trains operating on the line. The average trip times for the UHRR between North Creek and Riparius is typically 2 hours. Currently the only station stops on this segment are North Creek and Riparius. The average annual ridership for the UHRR over the past several years has been about 20,000 passengers per year.

**Track Conditions and Planned Improvements.** The current condition of the tracks from North Creek to Riparius is fair. Warren County and NYSDOT have an ongoing capital improvement program to try to keep the line in good condition and to expand service to the south on the rest of the line to Corinth. Included in the capital program are track, bridge, grade crossing and station improvements for the entire 40-mile line scheduled for completion in 2004.

**Battenkill Railroad (BRR)**

The Battenkill Railroad (BRR) operates and maintains, but does not own, the former Delaware & Hudson Railway (D&H) Washington Branch from Eagle Bridge in Rensselaer County (MP 142.7) to Salem (MP 125.0) (see Exhibit 2.4-12 for the location of this trackage).

The entire line is a single-track mainline with no signal system and a maximum operating speed of 10 MPH for passenger trains. Freight trains currently use this section of track on an as needed basis.

**Current Operations.** BRR operates 6 passenger excursion trains per week on this segment during the summer and 4 trains per week during the fall. Trains typically do not operate on this line during the winter and spring. The average trip times for the BRR between Cambridge and Salem is typically one hour. Currently the only station stops on this segment are Cambridge, Shushan and Salem. The average annual ridership for the BRR over the past several years has been about 5,000 passengers per year. In addition, one or two freight trains per week operate on this line year-round, as required.

**Track Conditions and Planned Improvements.** The current condition of the tracks from Cambridge to Salem is fair. No capital improvements are presently planned.
2.4.3. Planned Rail Improvement Projects in the Primary Study Area

Numerous railroad projects are being conducted or planned throughout the study corridor. The following additional projects were identified through review of individual railroad master plans and interviews with railroad representatives:

- **NYSDOT Rail Program**
  - Adirondack Branch connection to Saratoga Springs Station
  - Rensselaer Station improvements (completed)
  - Empire West Study (Albany to Buffalo HSR)
  - Rensselaer turbo shop
  - Shuttle bus service from Fort Edward Station to Glens Falls
  - Grade separation projects between Rensselaer and Schenectady

- **CP Rail Systems (Former D&H)**
  - $3.5 M for clearance improvements, (2 tunnels, 7 bridges)
  - $27.0 M for track repairs to Canadian Mainline (includes Saratoga & Plattsburgh yards)
  - Install Vertical Array Cargo Inspection System (VACIS) at the border to reduce crossing time
  - Configuration improvements at Plattsburgh Yard
  - Relocate bulk transfer operations at Plattsburgh Yard to the PARC
  - Ongoing capital improvements (i.e. track and signals)

- **CSX Transportation (Former Conrail)**
  - Double track River Subdivision (Ravena – Coxsackie)
  - Improve vertical clearances on the Hudson Subdivision
  - Ongoing capital improvements (i.e. track and signals)

- **Guilford Transportation (Springfield Terminal / Former B&M)**
  - Improve vertical clearance at Hoosick Tunnel
  - Ongoing capital improvements (i.e. track and signals)

- **Vermont Railway (CLP & Hoosick Section)**
  - Ongoing capital improvements (i.e. track and signals)

- **Amtrak**
  - Schenectady Intermodal Station (completed)
  - Double track Rensselaer to Schenectady (scheduled for 2005)
  - $5.0 M to rehabilitate Saratoga Springs Station (completed)

- **Upper Hudson River Railroad (Warren Co.)**
  - $10.0 M to refurbish the track, bridges and grade crossings between Corinth and North Creek for tourist service

- **SEDC (Saratoga Co.)**
  - Purchase Adirondack Branch from CPR for $3.7 M
Rehab Adirondack Branch from Saratoga to Corinth for passenger service

Some of these are projects that involved significant new investments in the rail corridor (e.g., the new Albany-Rensselaer Station, grade-separation projects). Some (CPR’s track repairs on the Canadian Mainline) are addressing long-standing maintenance and capital improvement needs, while others (e.g., (VACIS) Vertical Array Cargo Inspection System at Rouses Point) are introducing modern freight or passenger operations or facilities to enhance the speed and reliability of these services in the corridor. Finally, some of these are concepts that have been identified and even designed but are not presently funded or scheduled for implementation. However, there are a number of other potential system improvements that could substantially improve corridor rail operations. These improvement concepts, and the needs that they would address, are discussed later in this section.

2.4.4. Summary of Existing Rail Network Conditions and Operations in the Study Area

The rail network that exists in the Study Area is a complex system comprised of both freight and passenger service. The freight rail network consists of Class 1 railroads, regional railroads, short lines and terminal operators. Each of these rail operators are interconnected in an international freight network that moves raw materials and finished products to and from industries, transloading facilities, ports, and other railroads throughout the Northeastern United States and Canada, as well as abroad.

As discussed earlier, the freight railroad companies that operate in the Primary Study Area include CP Rail Systems, CSX Transportation, Guilford Transportation, the Albany Port Railroad and Vermont Railway, while passenger railroads consist of both publicly and privately owned companies that provide services ranging from regular intercity passenger service to seasonal excursion trains. The passenger and tourist railroads that operate in the study area are Amtrak, Upper Hudson River Railroad (Warren County), and the Battenkill Railroad.

Much of the rail network, which generally is in good condition, has elements that severely limit its efficiency and effectiveness in meeting the corridor’s rail service needs. Both freight and passenger services in the corridor face operational issues that increase their running times and reduce reliability – factors that limit their marketability in the freight and passenger travel markets. The primary areas of concern are congestion, capacity, and limited intermodal capabilities/facilities.

The key improvement areas, in general, that were identified to address these areas of concern in the Study Area rail network include the following:

- **Capacity Improvements** (double track projects). The number of tracks in a given rail segment has the most dramatic effect on operating capacity and congestion. Since most of the mainline segments in the Study Area are single track with only a few passing sidings, their capacity is often limited and congestion becomes an issue on a daily basis, particularly when freight and passenger trains are sharing the same facility.

- **Speed Improvements** (track and signal projects). If certain key rail segments throughout the Study Area (not necessarily the entire corridor) were expanded from
single track to double track, the capacity for these lines, and of the overall corridor, would increase dramatically. Many of these segments were identified and are listed in the next section under Improvement Concepts.

The condition of the existing railroad infrastructure has a direct effect on speed limitations. If train speeds are lower, then congestion becomes more of an issue because it takes longer for each train to clear the next track segment so another train can enter or pass. When speeds are lower and volumes are higher, the level of service, in either case, diminishes rapidly.

If critical track segments were upgraded to remove temporary speed restrictions and, thus, increase allowable operating speeds, then single-track segments would clear out sooner and would allow train traffic to move more expeditiously through the corridor.

Track upgrades that would promote faster freight and passenger train speeds and reduced trip times include the replacement of failed crossties; the resurfacing of rough track; and the replacement of jointed rail with continuous welded rail.

- **Connectivity Improvements** (freight connections). Another improvement area that would expedite rail traffic movements in the study area, particularly on the freight side, would be the construction of key connections between existing rail lines that currently do not allow free flow movements and interchanges. By building track connections at strategic locations, many high-priority freight movements could bypass switching yards and other congested areas and continue their unimpeded trip to their final destination. This is particularly important for intermodal shipments because they are competing with over the road commercial vehicle shippers and need to be time sensitive and cost effective in order to be competitive.

- **Clearance Improvements** (vertical and horizontal clearance projects). Clearance improvements at critical locations would also promote the expansion of intermodal traffic in the study area by allowing for the movement of double stack containers on the primary north-south routes in the corridor. Double stack containers require a larger vertical clearance envelope and there are several locations in the rail network that prevent this traffic from running at this time. These restrictions have been identified and included in the Enhancement Strategies in the next section.

- **Intermodal Improvements** (build/expand intermodal facilities). The marketability of rail freight operations and their ability to compete against truck freight modes would increase significantly if properly placed and designed intermodal facilities were available at key junctures along the corridor. This issue will be address in the section of this report addressing intermodal operations.

The cumulative effect of all of these rail network improvements would greatly enhance the freight railroad's abilities to attract and grow the intermodal business. Therefore, in order to accommodate that increase in business, the existing intermodal facilities in the study area would have to be expanded, and new ones built at critical locations, so the traffic can flow seamlessly through the transportation network.
Passenger rail service levels would also benefit from these cumulative improvements as there would be increased operating speeds, less congestion, smoother ride quality, and faster trip times that would, most likely, result in increased ridership.

2.4.5. Rail Network Improvement Concepts

Exhibit 2.4-15 lists the improvement concepts within the Rail category that have been identified to address the critical needs identified above for the corridor’s rail network. The approximate location of each within the Primary and Secondary Study Areas is shown, and brief write-ups of each concept are also provided.
### Exhibit 2.4-15: Rail Improvement Concepts

<table>
<thead>
<tr>
<th>No.</th>
<th>Project Concept</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>R-1</td>
<td>CP Canadian Mainline -- Double Track</td>
<td>Various Locations</td>
</tr>
<tr>
<td>R-2</td>
<td>CP Rail Freight Mainline -- Double Track</td>
<td>Various Locations</td>
</tr>
<tr>
<td>R-3</td>
<td>CP Colonie Mainline -- Double Track</td>
<td>Various Locations</td>
</tr>
<tr>
<td>R-4</td>
<td>CSX River Sub. -- Double Track Ravena to Coxsackie</td>
<td>Greene County</td>
</tr>
<tr>
<td>R-5</td>
<td>CSX NE Wye Connection</td>
<td>Selkirk, Albany County</td>
</tr>
<tr>
<td>R-6</td>
<td>CSX Hudson Sub. -- Double Tr. Rens. to Schenectady</td>
<td>Capital District</td>
</tr>
<tr>
<td>R-7</td>
<td>Amtrak Scotia Connection -- Schenectady Station</td>
<td>Schenectady County</td>
</tr>
<tr>
<td>R-8</td>
<td>Saratoga Yards Improvements</td>
<td>Saratoga County</td>
</tr>
<tr>
<td>R-9</td>
<td>CP Rail Clearance Improvements</td>
<td>Various Locations</td>
</tr>
<tr>
<td>R-10</td>
<td>Cabbage Island Branch</td>
<td>Albany County</td>
</tr>
<tr>
<td>R-11</td>
<td>Saratoga-Albany Commuter Rail Service</td>
<td>Capital District</td>
</tr>
<tr>
<td>R-12</td>
<td>CP Canadian Mainline Signal Improvements</td>
<td>Various Locations</td>
</tr>
<tr>
<td>R-13</td>
<td>CP Rail Track Rehabilitation</td>
<td>Various Locations</td>
</tr>
<tr>
<td>R-14</td>
<td>Vertical Array Cargo Inspection System</td>
<td>Clinton County</td>
</tr>
</tbody>
</table>

[Map of Rail Network & Operations with routes labeled R-1 to R-14]
### Improvement Concept: R-1

<table>
<thead>
<tr>
<th>Name and Location:</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Double Track CP Rail’s Canadian Mainline (Primary North - South Corridor), Various locations</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Purpose:</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Increase capacity, operating flexibility and reduce delays to passenger and freight service.</td>
<td></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Problem:</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Only 16 of the 170 miles of the Canadian Mainline is currently double tracked. Without ample passing sidings both passenger and freight trains can be significantly delayed.</td>
<td></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Description:</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>The design concept would be to add additional passing sidings at the locations listed below:</td>
<td></td>
</tr>
<tr>
<td>• Ballston Spa (CPC 33) to Saratoga (CPC 35)</td>
<td></td>
</tr>
<tr>
<td>• Saratoga (CPC 37 to CPC 38) <em>(Saratoga Yard bypass track to the west side of the yard)</em></td>
<td></td>
</tr>
<tr>
<td>• Gansevoort (CPC 44 to CPC 46)</td>
<td></td>
</tr>
<tr>
<td>• Fort Edward (CPC 54 to CPC 56) <em>(Southern Connection to So. Glens Falls Branch)</em></td>
<td></td>
</tr>
<tr>
<td>• Ticonderoga (CPC 115) to Port Henry (CPC 118)</td>
<td></td>
</tr>
<tr>
<td>• Wadhams (CPC 148 to CPC 150)</td>
<td></td>
</tr>
<tr>
<td>• Plattsburgh (CPC 165 to CPC 168)</td>
<td></td>
</tr>
<tr>
<td>• Rouses Point (CPC 191) to Canadian Border</td>
<td></td>
</tr>
<tr>
<td>In order to construct the second track, grading, bridges, grade crossings, tunnel and rock excavation may be necessary.</td>
<td></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Strategy:</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Additional track should be constructed as incremental projects, in priority order.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Benefit:</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Numerous benefits exist for both CP Rail and Amtrak, including:</td>
<td></td>
</tr>
<tr>
<td>• Increase in service reliability</td>
<td></td>
</tr>
<tr>
<td>• Reduction in delays and congestion</td>
<td></td>
</tr>
<tr>
<td>• Additional meet/pass locations between freight and passenger services</td>
<td></td>
</tr>
<tr>
<td>• Passing trains can move at normal operating speeds</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Status:</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>CP Rail is looking for funding at this time and has a list of locations where they believe double track sections would provide the most benefit.</td>
<td></td>
</tr>
</tbody>
</table>
## Improvement Concept: R-2

<table>
<thead>
<tr>
<th>Name and Location:</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Double Track CP Rail’s Freight Mainline (Primary East - West Corridor), Various Locations</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Purpose:</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Increase capacity, operating flexibility and reduce delays to freight services.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Problem:</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Few passing sidings currently exist on this line, thereby creating delays and congestion to both CP Rail and Guilford freight trains.</td>
<td></td>
</tr>
</tbody>
</table>

### Description:

The design would be to add additional trackage at the locations listed below:
- Mechanicville (CPF 467 to CPF 469)
- Clifton Park (CPF 478) to Schenectady (CPF 480)
- Schenectady (CPF 483 to CPF 485)

In order to construct the second track, grading, bridges, grade crossings, tunnel and rock excavation may be necessary.

### Strategy:

The additional trackage should be constructed as incremental projects, in priority order.

### Benefit:

Numerous benefits exist for both CP Rail and Guilford, including:
- Increase in service reliability
- Reduction in delays and congestion
- Additional meet/pass locations between freight service
- Passing trains can move at normal operating speeds

### Status:

CP Rail has been looking at this issue for some time and has a list of locations where they believe double track sections would provide the most benefit.
### Improvement Concept: R-3

<table>
<thead>
<tr>
<th><strong>Name and Location:</strong></th>
<th>Double Track CP Rail’s Colonie Mainline (Secondary North – South Corridor), Various locations</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Purpose:</strong></td>
<td>Increase capacity, operating flexibility and reduce delays to freight service.</td>
</tr>
<tr>
<td><strong>Problem:</strong></td>
<td>Few passing sidings currently exist on this line, thereby creating delays to freight trains.</td>
</tr>
</tbody>
</table>

**Description:**
The design concept would be to add additional trackage at the locations listed below:
- Kenwood (CPO 1) to Colonie (CPO 4)
- Colonie (CPO 5 to CPO 6)

In order to construct the second track, grading, bridges, and grade crossings, may be necessary.

**Strategy:**
Additional track should be constructed as incremental projects, in priority order.

**Benefit:**
Numerous benefits exist for both CP Rail, including:
- Increase in service reliability
- Reduction in delays and congestion
- Additional meet/pass locations between freight services
- Passing trains can move at normal operating speeds

**Status:**
CP Rail has been looking for funding for locations where double track sections would provide the most benefit.
## Improvement Concept: R-4

### Name and Location:
Double track CSX’s River Subdivision (North-South Freight Line, West of the Hudson), Ravena to Coxsackie

### Purpose:
Increase capacity, provide operating flexibility and reduce delays to freight services on CSX’s primary north-south freight line (west of the Hudson).

### Problem:
This is the principle freight corridor between Albany and NY/NJ (River Subdivision) and is primarily a single-track corridor. The single-track sections limit the capacity and overall productivity of the line by increasing delays and congestion.

### Description:
The design concept would add an additional passing siding at Ravena (CP 128) to Coxsackie (CP 121). This siding would allow the passing/storage of two trains on each track either entering or leaving Selkirk Yard on the River Subdivision. Therefore, it is a critical rail link that is necessary to alleviate congestion and facilitate operations along the River Subdivision south of the Selkirk Yard. Providing a double track along the entire length of this rail corridor is not necessary or feasible. There are several existing passing sidings between Selkirk and New Jersey that have been constructed at other critical congestion locations over the past five years.

In order to construct the second track, grading, bridges, grade crossings, tunnel and rock excavation may be necessary.

### Strategy:
Determine locations where significant delays and congestion currently exist. Once the main areas have been decided, the feasibility of each need to be determined.

### Benefit:
Numerous benefits exist for CSX, including:
- Increase in service reliability
- Reduction in delays and congestion at Selkirk Yard
- Additional meet/pass locations between freight services
- Passing trains can move at normal operating speeds

### Status:
CSX has been looking at this issue for some time and has a list of locations where they believe double track sections would provide the most benefit.
## Improvement Concept: R-5

<table>
<thead>
<tr>
<th><strong>Name and Location:</strong></th>
<th>CSX Northeast Wye Connection at CP SK, Town of Selkirk, Albany County</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Purpose:</strong></td>
<td>Reduce freight conflicts at Selkirk Yard by allowing a direct connection for CP Rail traffic between NYC and the Port of Albany from the north.</td>
</tr>
<tr>
<td><strong>Problem:</strong></td>
<td>The current configuration at CP SK only allows trains to approach from the north and west. The Port Subdivision (CSX’s line from Selkirk Yard to the Port of Albany) does not currently allow for CP Rail trains to run south to New York City directly from the Port of Albany without switching the direction of the locomotives.</td>
</tr>
<tr>
<td><strong>Description:</strong></td>
<td>The design concept would be to construct a wye track connection in the vicinity of CP SK to connect the Port Subdivision directly with the Castleton Subdivision that would allow southbound trains from the Port of Albany to go south to NYC without having to turn the locomotives or enter the yard to run around the train.</td>
</tr>
<tr>
<td><strong>Strategy:</strong></td>
<td>NYSDOT would work with CSX to further develop, design and expedite completion of this link improvement. The potential to re-establish the wye at Mechanicville to allow B&amp;M trains direct access to Port of Albany and the CSX interchange within the Kenwood Yards would also be reviewed for feasibility.</td>
</tr>
<tr>
<td><strong>Benefit:</strong></td>
<td>Reduces conflicts in Selkirk Yard and improve trip time for freight trains traveling between the Port Subdivision and NYC Harlem River Yard.</td>
</tr>
<tr>
<td><strong>Status:</strong></td>
<td>Opportunity identification.</td>
</tr>
</tbody>
</table>
**Improvement Concept: R-6**

**Name and Location:**
Double track CSX's Hudson Subdivision (Amtrak), Rensselaer to Schenectady

**Purpose:**
Increase capacity, increase operating flexibility and reduce travel delays to both passenger and freight trains in this corridor.

**Problem:**
The existing rail corridor between Rensselaer (CP 143) and Schenectady (CP 156) is single track. This segment is primarily used by Amtrak and is highly traveled as it provides access from the east and south to the north and west. The single track limits the overall capacity resulting in increased delays and congestion.

**Description:**
The design concept would be to double track between Rensselaer (CP 143) and Schenectady (CP 156). This corridor previously had multiple tracks and, therefore, few physical constraints currently exist.

**Strategy:**
NYSDOT and others continue to push for completion of this planned track improvement and expansion.

**Benefit:**
Numerous benefits exist for both Amtrak and CSX, including:
- Increase in service reliability
- Reduction in delays and congestion
- Continuous meet/pass locations between conflicting freight and passenger services
- Passing trains can move at normal operating speeds
- Accommodate future HSR service in the corridor

**Status:**
NYSDOT and Amtrak are seeking funding for this project, as well as CSX approvals.
## Improvement Concept: R-7

<table>
<thead>
<tr>
<th><strong>Name and Location:</strong></th>
<th>Amtrak Scotia Connection, Schenectady County</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Purpose:</strong></td>
<td>Allow Amtrak Adirondack trains to bypass CP Rail’s Mohawk Yard and still access Schenectady Station.</td>
</tr>
<tr>
<td><strong>Problem:</strong></td>
<td>Mohawk yard has limited track space resulting in delays to trains and blocking of the through routes for Amtrak. The track on both sides of the yard is constantly blocked by freight trains setting off cars during switching operations. The current main line runs through the center of the freight yard. A bypass track will eliminate conflicts between freight and passenger operations.</td>
</tr>
<tr>
<td><strong>Description:</strong></td>
<td>The design concept would be to construct the former connection to the Sand Bank Yard from milepost 161 on the Hudson Subdivision to CP Rail’s tracks at CPF 483 in Schenectady in order to run Amtrak passenger trains west of the Mohawk River and connect with the CP Rail near Mohawk Yard.</td>
</tr>
<tr>
<td><strong>Strategy:</strong></td>
<td>NYSDOT, working with Amtrak and CP Rail to develop, design and expedite completion of this rail yard by-pass improvement.</td>
</tr>
<tr>
<td><strong>Benefit:</strong></td>
<td>This would relieve congestion and eliminate passenger and freight conflicts in the Schenectady area, therefore reducing delays.</td>
</tr>
<tr>
<td><strong>Status:</strong></td>
<td>The NYSDOT is currently looking into this option. CP Rail also supports this concept and discussions are ongoing.</td>
</tr>
</tbody>
</table>
**Improvement Concept: R-8**

<table>
<thead>
<tr>
<th><strong>Name and Location:</strong></th>
<th>Saratoga Yard Improvements, City of Saratoga Springs, Saratoga County</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Purpose:</strong></td>
<td>To improve both passenger and freight operations in the vicinity of Saratoga Yard.</td>
</tr>
<tr>
<td><strong>Problem:</strong></td>
<td>The Canadian Mainline currently runs through the center of Saratoga Yard. With this current alignment, operating conflicts between passenger and freight movements are common. When through trains pass by Saratoga Yard it is necessary for yard switching activities to stop, resulting in negative impacts on yard efficiency.</td>
</tr>
<tr>
<td><strong>Description:</strong></td>
<td>The design concept would be to rehabilitate the yard tracks at the Saratoga Springs Amtrak station. With these improvements a power crossover will be constructed from the main track to the Saratoga Running Track (south of the station) and will allow passengers to transfer to and from the train, while freight trains pass on the main track. These improvements will also allow for holding and layaway capacity for Amtrak trains.</td>
</tr>
<tr>
<td><strong>Strategy:</strong></td>
<td>NYSDOT, working with CP Rail to develop, design and expedite completion of this rail yard improvement.</td>
</tr>
</tbody>
</table>
| **Benefit:**           | • Reduce delays to both passenger and freight trains  
                          • Increase Amtrak service reliability |
| **Status:**            | Some improvements, especially in regard to passenger train movements, are underway at the new train station, while others are in the planning stage. |
### Improvement Concept: R-9

<table>
<thead>
<tr>
<th><strong>Name and Location:</strong></th>
<th>CP Rail Clearance Improvement Projects, various locations</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Purpose:</strong></td>
<td>Accommodate double stack container traffic.</td>
</tr>
<tr>
<td><strong>Problem:</strong></td>
<td>Within the CP Rail Canadian Mainline corridor, there are several locations that have limited vertical clearances that restrict double stack container traffic. It is not possible for railroads to offer a competitive container service where double stacks are prohibited.</td>
</tr>
</tbody>
</table>

**Description:**
The design concept would be to increase vertical clearances at these restricted locations in order to provide 22′6″ clearances that would permit the movement of double stack containers in this corridor. There are nine locations in the corridor (2 tunnels, 7 bridges) where vertical clearances are not adequate for double stack traffic.

**Strategy:**
NYSDOT, working with CP Rail and others to confirm location and extent of clearance problems and develop, design and expedite necessary improvements.

**Benefit:**
When all of the vertical clearances are increased to 22′6″, double stack containers could move in this corridor between New York City, Albany and Montreal. This would increase productivity and make railroads more cost competitive with other modes.

**Status:**
NYSDOT and CP Rail are currently investigating ways to fund these projects.
### Improvement Concept: R-10

<table>
<thead>
<tr>
<th>Name and Location:</th>
<th>Cabbage Island Branch, Albany County</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Purpose:</strong></td>
<td>Extend the rail link south from the Port of Albany to connect with existing and future industrial facilities.</td>
</tr>
<tr>
<td><strong>Problem:</strong></td>
<td>The Albany Port Railroad has limited access to the south end of the port and neighboring industrial facilities. The track was previously taken out of service due to lack of use in order to cut costs. It is now desirable to put some of these sections back into use.</td>
</tr>
<tr>
<td><strong>Description:</strong></td>
<td>The design concept would extend the former Cabbage Island Branch tracks from the Albany Port Railroad to the south in order to provide access to the existing power plant and future industrial sites currently available for development.</td>
</tr>
<tr>
<td><strong>Strategy:</strong></td>
<td>NYSDOT, working with Albany Port RR, CP and CSX to develop, design and expedite completion of this rail extension.</td>
</tr>
</tbody>
</table>
| **Benefit:**      | • Increased potential for industrial development of lands south of the port.  
                    • Increased business for the APRR and the Capital District.  
                    • Reduction of truck traffic on local highway network near downtown Albany. |
| **Status:**       | Opportunity identification. |
Improvement Concept: R-11

<table>
<thead>
<tr>
<th><strong>Name and Location:</strong></th>
<th>Saratoga/Albany Commuter Rail, Albany and Saratoga Counties</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Purpose:</strong></td>
<td>To provide cost effective commuter rail service that would reduce vehicular traffic in the I-87 corridor between Saratoga and Albany.</td>
</tr>
<tr>
<td><strong>Problem:</strong></td>
<td>No competitive transportation mode currently exists that could take large numbers of cars off of I-87 during peak hours. There is also limited funding available to proceed with this type of project (previously funded commuter demonstration projects were cancelled).</td>
</tr>
<tr>
<td><strong>Description:</strong></td>
<td>The design concept would be to introduce commuter rail service between Saratoga and Albany. The use of existing railroad alignments with some upgrades such as double tracking and signaling is assumed. Two possible routes would be considered:</td>
</tr>
<tr>
<td></td>
<td>• Saratoga – Schenectady – Albany (CP Rail Canadian ML – CSX Hudson Subdivision)</td>
</tr>
<tr>
<td></td>
<td>• Saratoga – Clifton Park – Mechanicville – Watervliet – Albany (CP Rail Canadian ML – Former D&amp;H Round Lake Line – CP Rail Colonie ML).</td>
</tr>
<tr>
<td><strong>Strategy:</strong></td>
<td>NYSDOT, working with CDTC and others, to further study the option of commuter rail service in this corridor.</td>
</tr>
<tr>
<td><strong>Benefit:</strong></td>
<td>Either alignment would:</td>
</tr>
<tr>
<td></td>
<td>• Reduce congestion on I-87</td>
</tr>
<tr>
<td></td>
<td>• Provide commuters with alternative modes of travel</td>
</tr>
<tr>
<td></td>
<td>• Foster urban redevelopment in some areas</td>
</tr>
<tr>
<td><strong>Status:</strong></td>
<td>Opportunity identification. Previous studies of this concept were performed, but the high capital costs and associated operational problems indicated limited potential to cost-effectively offer this type of service.</td>
</tr>
</tbody>
</table>
## Improvement Concept: R-12

<table>
<thead>
<tr>
<th>Name and Location:</th>
<th>Signal Improvements on CP Rail’s Canadian Mainline, various locations</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Purpose:</strong></td>
<td>To improve the outdated signal system on the Canadian Mainline in order to provide more reliable train operations.</td>
</tr>
<tr>
<td><strong>Problem:</strong></td>
<td>Many segments of the signal system on the route are obsolete, creating reliability problems that affect on-time performance and capacity. It is proposed that these improvements be made to the signal system to enhance the corridor’s capacity to handle high speed and high-density train operations.</td>
</tr>
</tbody>
</table>
| **Description:**  | The design concept would include the following items:  
|                   | • Replacement of the pole line with electronic track circuits  
|                   | • Upgrades to the standby power systems including batteries and standby generators  
|                   | • Upgrades to grade crossing gates, gate motors, and signal lamps  
|                   | • Various function and express cable replacements  
|                   | • Wayside signal mast replacements  
|                   | • Power switch machine replacements  
|                   | • Remote control system upgrades  
|                   | • Radio base upgrades including improving radio coverage  
|                   | • Dispatcher office control system upgrades |
| **Strategy:**     | NYSDOT would continue to work with CP Rail and others to expedite completion of these needed improvements. |
| **Benefit:**      | More reliable train schedules and capacity can be achieved with upgraded modern signal equipment. This would also reduce the cost to maintain the operation and maintenance down time required. |
| **Status:**       | The capital needs of the CP-owned railroad exceed available funding. NYSDOT has shown interest in the capital needs as they relate to passenger and freight operations in the corridor. |
## Improvement Concept: R-13

<table>
<thead>
<tr>
<th>Name and Location:</th>
<th>CP Rail Track Rehabilitation, Various locations</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Purpose:</strong></td>
<td>Upgrade existing rail infrastructure.</td>
</tr>
<tr>
<td><strong>Problem:</strong></td>
<td>Existing track and signal conditions have resulted in placing “slow orders” on the track. These slow orders have a direct impact on both passenger and freight on-time performance.</td>
</tr>
</tbody>
</table>

### Description:
The design concept would be to upgrade the following:
- Replace defective ties and surface track (to meet FRA Class 4 track standards)
- Line, surface and superelevate curves for desired freight and passenger speeds
- Replace existing jointed rail with continuous welded rail
- Upgrade existing grade crossings

### Strategy:
CP Rail would continue to work with NYSDOT and others to locate capital funding, and to expedite completion of these needed improvements.

### Benefit:
Stabilization and upgrade of the track structure and signal system will result in the removal of the slow orders, increase in average operating speeds and the reduction in overall trip times. Passenger and freight on time performance will improve as well as reliability at higher speeds.

### Status:
The capital needs for this work exceeds current available funding at CP Rail. Still in planning stage.
**Improvement Concept: R-14**

<table>
<thead>
<tr>
<th><strong>Name and Location:</strong></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>VACIS (Vertical Array Cargo Inspection System)</td>
<td></td>
</tr>
<tr>
<td>Project at Rouses Point, Clinton County</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Purpose:</strong></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Upgrade station at Rouses Point to accommodate the VACIS train inspection equipment.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Problem:</strong></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Trains are delayed at the station during compliance checks for the necessary paperwork and inspections for border crossings. The security checks cause congestion and delay, affecting on-time performance.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Description:</strong></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>VACIS (Vertical Array Cargo Inspection System) is a vehicle cargo inspection system that uses gamma ray technology to scan railroad cars and containers for loading. The system can detect contraband and compare bills of loading with actual load scans for consistency with declared manifests.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Strategy:</strong></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Install VACIS systems and equipment in locations encompassing the railroad tracks near the U.S./Canadian border. The system should be installed where there is adequate track capacity so that the trains may remain in motion while being scanned, and trains that must be detained for further security checks still have room to be stopped.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Benefit:</strong></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Reduced transit time for freight shipments at the border, reduced congestion at the border, reduce human errors in the detection of contraband and inconsistencies in the shipment manifests.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Status:</strong></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>This concept is currently programmed for construction.</td>
<td></td>
</tr>
</tbody>
</table>