



Valley Railroad State Park Economic Impacts Study

Developed for
**Lower Connecticut River Valley Council of
Governments**

Essex, Connecticut
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Chapter 1 Introduction – Study Purpose

The purpose of the Valley Railroad State Park Economic Impacts Study (Economic Impacts Study) is to identify various costs and impacts of future uses of the Connecticut Valley Railroad State Park right-of-way as input for determining the future best use or uses of the corridor. The Connecticut Department of Energy and Environmental Protection (CT DEEP) owns the state park and rail line. The property is under a long-term lease to the Valley Railroad Company (VRR) for the operation of a scenic railroad service called the Essex Steam Train.

The Lower Connecticut River Valley Council of Governments (RiverCOG) has been tasked with studying the Valley Railroad corridor as a regional asset, looking at options for the future of the property. To that end, RiverCOG initiated both this study and a 2014 Valley Railroad State Park Scenic Corridor Study (Scenic Corridor Study) looking at the feasibility of a multi-use trail along the northern nine miles, from Eagle Landing State Park to Maromas.

In each of these studies, RiverCOG is interested in studying the Valley Railroad corridor's potential to contribute to planning in three areas: transportation, conservation, and economic development. This study is focused primarily on the potential of the corridor to contribute to economic development and the feasibility of particular transportation functions.

Over the past few years, discussions have occurred regarding whether uses other than the VRR's scenic railroad could occur within the park and along the railroad line. These other uses under discussion have included construction of a multi-use trail, expanded use of the rail line for freight purposes, expanded uses of the rail line for passenger rail purposes, or extension of the rail line for continued scenic rail service.

Each of these future alternative uses of the rail line would have implications for the region and the communities along the corridor. This Economic Impacts Study will identify costs and benefits related to the future uses contemplated for the corridor, as well as identify conditions that bring into question the feasibility of potential future uses.

This report provides an overview of current and past uses of the Valley Railroad State Park Corridor. The history of demand for rail services along the corridor is also summarized as it provides important context for the feasibility of future uses. After providing an overview of the future uses, a summary of the benefits and constraints is provided. Detail regarding analysis for the benefits and constraints analysis is provided in the report appendices.

During the study development process, the study team (HDR) had discussions with various stakeholders along the corridor to gain an understanding of the physical and economic conditions of the area. The study team thanks those individuals for their time and insight into potential opportunities. In addition to the phone and in person interviews, the study team held numerous stakeholder and public meetings throughout the study to help identify major issues, review study findings, and gather input.

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Chapter 2 Valley Railroad Corridor Use

2.1 Development of the Valley Railroad

Today, the Connecticut Valley Railroad State Park is a 21.7-mile long rail corridor between Old Saybrook to the Maromas section of Middletown. The majority of the corridor runs alongside or near the Connecticut River. The state park has been owned by the State of Connecticut since 1969. The Valley Railroad Company operates the Essex Steam Train tourist excursion service on the lower thirteen miles of track, from Tylerville to Old Saybrook. The company, with the help of the non-profit Friends of the Valley Railroad, maintains the corridor, including the nine miles that are not in regular use by the railroad.

In 1868, the Connecticut Valley Railroad Company was chartered to build a railroad over the 44 miles between Old Saybrook and Hartford with the intent of competing with steamboat service on the Connecticut River. Construction was initiated by April 1870 in Higganum. With an intensive construction effort, the rail line was up and operational just 15 months later. The first passenger train operated in late July 1871.

After a rocky financial start, the railroad was taken over in 1880 by the Hartford and Connecticut Railroad, a new company associated with the New York, Hartford, and New Haven Railroad. When forced to comply with new federal regulations, in particular the Interstate Commerce Act of 1887, the New York, New Haven, and Hartford Railroad began to invest in more modern equipment and better track. By 1920, the company had built many new freight and passenger station houses along the Valley Railroad line.

The railroad provided an improved passenger and freight connection between the lower Connecticut Valley and the Hartford area. Although passenger ridership was robust in the early years, the demand for passenger transportation rapidly declined after automobiles became a common mode of travel. By 1933, the demand for the service had run its course and the passenger service was terminated after 61 years of operation.

Even though there was a limited amount of industry in the lower Connecticut Valley, rail freight service continued with branch line service while competing with the expanding trucking industry. The Valley Railroad line was abandoned below Middletown shortly after the New York, New Haven, and Hartford Railroad went bankrupt in 1968.

After the rail line was abandoned, the Connecticut Valley Railroad Association, a group that owned old steam-powered railroad rolling stock, became interested in taking over the abandoned Valley line for a tourist railroad. The Connecticut Park and Forest Department, now the CTDEEP, "with the goal of controlling commercial development along this scenic right-of-way next to the Connecticut River, took title to the line in 1969 and leased it to the Connecticut Valley Railroad in 1970."¹

The new railroad, now known as the Valley Railroad Company, was authorized to operate passenger and freight service from Old Saybrook to Maromas, just south of Middletown. The railroad acquired vintage equipment and using primarily with volunteer labor, rehabilitated the track and the equipment to get them in operating condition. The first tourist steam train made its maiden run on July 29, 1971, the centennial anniversary of the line. Initially, only three miles of

¹ *Essex Freight Station National Register National Register of Historic Places Application*

track were restored from Essex to Deep River, where a connection can be made with riverboats run by the Deep River Navigation Company. By 1983, the line was extended to Chester, a total distance of 5 1/2 miles. Today, the Valley Railroad Company has cleared and made 13 miles of track operational between Old Saybrook, Essex, and Haddam.²

From the 1892 station in Essex, passengers can choose from a variety of train and combination train and riverboat excursions up the Connecticut River valley. Special trips include a visit to Gillette Castle State Park, via a short walk and a ride on the Chester ferry, and 'Your Hand On The Throttle.' The rail yard alone is of interest to train aficionados. Depending on the season and schedules, more than two dozen pieces of vintage rolling stock can be seen, including a variety of engines.

2.2 History of Demand for the Valley Railroad

The Valley Railroad was constructed in 1871, which was after the initial wave of railroad construction in New England. The economic potential of railroads was identified as early as 1835 when efforts to build railroads within the lower Connecticut River valley were initiated. However, the region could not raise the required capital funding before other regions between New York and Boston were able to. Due to the complexity of constructing a bridge across the Connecticut River, a through-line from New Haven to Boston, bridging at Middletown, was not completed until 1873. By that time, main lines had already been established through Meriden, Hartford, and along the shoreline. This failure to gain an early through connection prevented the tremendous industrial growth which cities like Hartford and Meriden experienced, and is in large measure responsible for the region's more modest development.³

Furthermore, when compared to other Connecticut industries, post-Civil War industrial growth in the region continued in the earlier tradition of local investment and small-scale manufacturing for local markets. Thus, the area retained to some extent a relatively insular and undisturbed character. Although manufacturing and development continued to occur in the region throughout the early 1900s, with the changes that occurred after World War II, including increased automobile use and the expansion of the Interstate highway system, demand for rail service changed even more. Passenger service along the corridor had already stopped by 1933, but the modest freight rail traffic continued. Demand for freight rail by local manufacturing started to decline during the mid-20th Century, as small manufacturing operations changed to trucking. For a period, service along the line south of Middletown was strengthened by the United Aircraft CANEL plant, a government-owned facility established in 1957. However, even that plant was not able to provide enough demand to keep the line viable. Freight operations along the line ceased just before the New York, New Haven, and Hartford Railroad went into bankruptcy in 1968.

The Lower Connecticut River Valley has never been a robust commercial and manufacturing area in ways that are supportive of a rail line, either for freight or passenger services. Land use along the corridor has not changed dramatically since those days and several initiatives are in place to ensure the preservation of the area's existing character and development pattern. The Connecticut River Gateway Commission was established to carry out its mission to "preserve the unique, scenic, ecological, scientific and historic values of the lower Connecticut River valley for the enjoyment of present and future generations of Connecticut citizens."⁴ Most of the Valley

² *Essex Freight Station National Register National Register of Historic Places Application*

³ *History of Middletown, B.A. Cleary, 1979*

⁴ *Connecticut River Gateway Commission*

Railroad is located within the Gateway Conservation Zone, which was established to ensure that development along the river does not impact the “natural and traditional riverway scene.” Consequently, an increase in commercial development in the corridor does not appear likely.

Discussions with economic development professionals and businesses in the communities along the corridor suggest a reluctance to move toward the full elimination of rail accessibility. That said, very few stakeholders indicated that they would use rail in the near term, even if it was available. Several people interviewed indicated an interest in future passenger rail, and a few also suggested that freight rail might be an option down the road. Several of the individuals who were interviewed, underscored the ability for the Valley Railroad Company to support continued tourism service. Most did not see an immediate demand for either passenger or freight rail along the Valley Railroad line. Representatives of one town went so far as to say that they were not concerned about economic development.

Chapter 3 Future Uses Considered

3.1 Summary of Future Uses

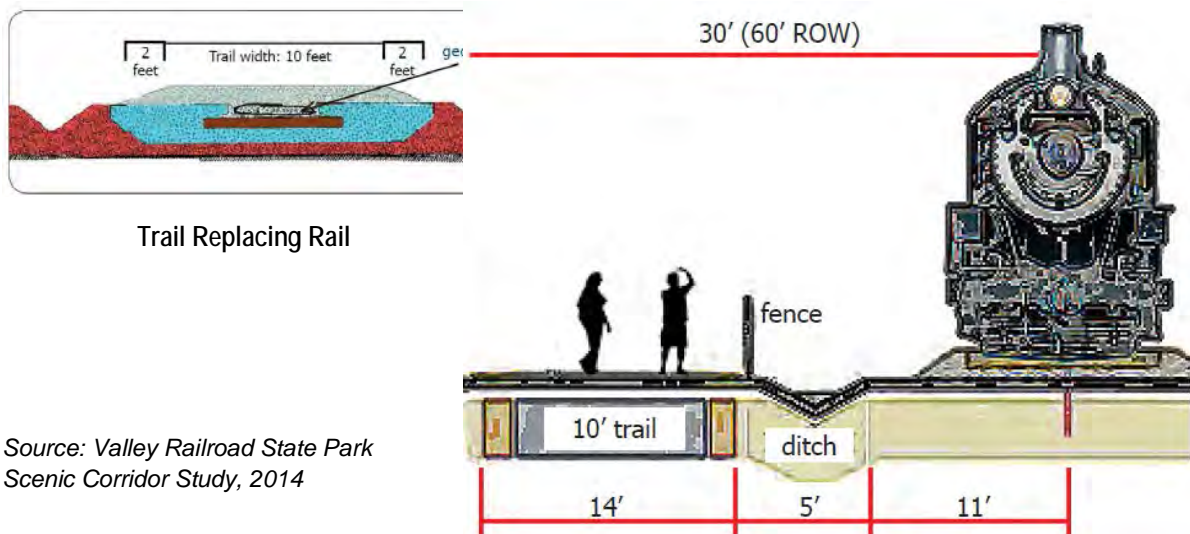
In 2009, a U.S. Department of Transportation (USDOT) Transportation Investment Generating Economic Recovery (TIGER) grant application was submitted to help fund the refurbishment of the tracks for freight use along the entirety of the corridor. Although this grant application was not successful, it sparked renewed interest in exploring options for the future use of the corridor.

While the scenic rail service provides a viable use of the corridor, over the past few years discussions have occurred regarding whether other uses could occur within the park and along the railroad line. Recent discussions have been focused on four primary future uses: construction of a multi-use trail, expanded use of the rail line for freight purposes, expanded uses of the rail line for passenger rail purposes, and extension of the rail line for continued scenic rail service. The following section provides a summary of those uses.

3.2 Construction of a Multi-Use Trail

As part of the Scenic Corridor Study, concepts were developed that explored the possibility of developing a multi-use trail along the nine-mile section of the corridor that is not currently used by the Valley Railroad Company for scenic rail service. The Scenic Corridor Study identified various design options, including utilizing the nine-mile segment as either a dedicated trail corridor (“trail replacing rail”) or a corridor with a trail next to the rail (“trail with rail”). The study identified that both options offer opportunities and have constraints.

Figure 3.1: Cross Sections of Multi-Use Trail Concepts



Source: Valley Railroad State Park
Scenic Corridor Study, 2014

This study is assessing the impacts of a multi-use trail in the “trail with rail” configuration since the Valley Railroad holds a long-term lease for scenic rail use of the corridor. Use of the northern nine miles as a multi-use “trail replacing rail” may be an option in the future through a coordinated discussion and effort with Valley Railroad and CT DEEP to modify the term of Valley Railroad’s lease in a manner consistent with the requirements of the LWCF. That option is not being assessed as part of this study.

3.3 Expanded Use of the Rail Line for Freight Service

The expanded use of the Valley Railroad Line for freight service would include the re-introduction of freight rail service along the line. As noted in a previous report section, freight has not operated along the line since 1968. The re-introduction of freight would require capital improvements along the corridor and operational changes for the Essex Steam Train. A general description and cost estimate of the necessary capital improvements is included in Appendix B. To have a better understanding of the types of costs, impacts, and benefits that may result from the re-introduction of freight service, the study team developed a set of assumptions regarding the type and frequency of service. These assumptions were based on typical demands for non-urban branch lines in New England. For infrastructure estimating purposes, it was assumed that the required upgrades to the track and bridge infrastructure would be sufficient to support a 286,000-pound freight car, which is an industry standard in the movement of railroad freight. Furthermore, it was assumed that the maximum service on the line would include two freight movements per weekday operating with a maximum speed of 25 mph.

The extent of improvements to the line would depend on whether the freight rail service is focused on local customers or if the line was used for through-movements. Through-movement rail freight would require reconstruction of the entire Valley Railroad line between Old Saybrook and Maromas, as well as the restoration of the state-owned Laurel Branch that runs from Maromas to Middletown. Local service could be provided by improving the line only between Old Saybrook and the location of customer facilities along the line. For the purposes of this study since there is no specific project was proposed, a general assessment of the re-introduction of freight service along the length of the Valley Railroad was undertaken.

3.4 Expanded Use of the Rail Line for Passenger Service

The potential expansion of the Valley Railroad Line for passenger service would include the re-introduction of passenger rail service along the line. As noted in a previous report section, passenger rail service has not operated along the line since 1933. The re-introduction of passenger service would require capital improvements along the corridor and operational changes for the Essex Steam Train. Cost estimates for the necessary capital improvements are similar to those included in Appendix B for the freight rail options, however additional improvements would be necessary, including signal systems, passenger station platforms, parking facilities, and an equipment maintenance facility. In addition to the upgrade of the Valley Railroad Line, much of the remainder of the line between Maromas and Hartford would require restoration as well. A market assessment of potential passenger rail service is included in Appendix A.

3.5 Extension of the Rail Line for Continued Scenic Rail Service

An extension of the rail line for continued scenic rail service would include the restoration of the northern nine miles of the corridor to a condition that would allow the regular use of the corridor for the Essex Steam Train. Cost estimates for the necessary capital improvements are included in Appendix B. Since there is no specific proposal suggested or identified by the Valley Railroad for the extension of use, it is assumed that any extension of use would be of similar nature to the existing scenic train operation.

Chapter 4 Future Use Decision Elements

4.1 Benefits and Constraints

Identifying the benefits and constraints associated with the Valley Railroad corridor’s potential to contribute to economic development in the region and the feasibility of each potential Future Use Option requires an assessment and evaluation of multiple Decision Elements. The following section summarizes the Decision Elements that were identified as points of interest. Table 4.1 provides a summary for all four options. Additional detail regarding particular Decision Elements are included in the Report Appendices.

Table 4.1 Summary of Benefits and Constraints

Decision Element	Multi-Use Trail	Freight Rail Service	Passenger Rail Service	Expanded Scenic Rail
Market within the COG Region	Yes	Limited	No	Potential
Market outside the COG Region	Potential	Limited	No	Potential
Capital Cost	\$23 to \$30 Million	\$30 Million plus	\$30 Million plus	\$5 to \$6 Million
Joint Use with Essex Steam Train	Would require physical separation	Limited	Limited	N/A
Impact to VRR	Physical Separation Required	Potential Impacts to VRR Business Model	Potential Impacts to VRR Business Model	Additional Operating & Maintenance Costs
Local Highway Traffic Impact	None	Potential for slight decrease	None	Potential for slight increase
State-wide transportation improvements	Expand state-wide bike network	Provide optional routing (redundancy) for freight rail traffic	Expand state-wide transit network	None
Tourist Economy Impacts	Limited Benefits	No Benefits / Possible Negative Impacts	No Benefits	Potential Benefits
Commercial Development	No Impact	Unlikely	No Impact	No Impact
Job Creation	Construction jobs dependent upon improvement	Construction jobs low	Construction jobs high	Construction jobs low
Environmental Impacts	Low Risk	High Risk	Medium Risk	Medium Risk
Land Use Impacts	Limited Impact	Limited Impact	Limited Impact	Limited Impact
Impact to Abutting Land Values	Likely Positive	Negative	Negative	Negative
Safety Impacts	Physical separation required between rail and trail	Increases number of trains	Increases number of trains	Increases number of trains
Aesthetic Impacts	Limited	High potential from operations	High potential from operations	Limited
LWCF Implications	Unlikely, as long as trail does not impact viability of scenic rail service	Likely (has high potential to impact scenic rail service)	Likely (has high potential to impact scenic rail service)	Unlikely

4.2 Decision Elements

Market within the COG Region

The following outlines the local market for each of the future uses considered:

- **Multi-use Trail** – The market for multi-use trails is highly dependent on the location, design, environment, connections and length of a specific trail. Although no market studies have been developed for a trail along the Valley Railroad corridor, a survey of a multi-use path in Simsbury, CT can provide an understanding of the potential market. Utilizing an automatic counter as a survey instrument, the Farmington Valley Trails Council identified that along an 8-mile segment of the Farmington Canal Heritage Trail an estimated 110,000 trips were logged in 2007, which represented over 18,000 unique visitors.⁵ Trail utilization estimates were re-evaluated in 2013, and it was found that utilization has remained steady with values ranging from 98,000 to 117,000 annual users on different segments of the trail.⁶ It is generally estimated that for most multi-use trails, utilization is dominated by local users.
- **Freight Rail** – Only one current business was identified that would consider using freight rail service. Private infrastructure investment would be required to provide access to the freight rail service. Any other local market for freight rail would need to be generated from new businesses that start up within, or relocate to, the region.
- **Passenger Rail** – It is estimated that the Lower Connecticut River Valley region would not create the level of demand that is needed to support a regularly scheduled passenger rail service focused on commuting or transportation purposes. See section 1.6 in Appendix A for additional information.
- **Scenic Rail** – The market for scenic rail service is typically to provide an experience to visitors of the area and not to residents of the region. However special trains, such as the “Polar Express” trains during the Christmastime can draw visitors from both nearby and more distant markets. The Essex Steam Train reports that the Polar Express trains typically operate at or near capacity and that there is likely a market for additional trains.

Market outside the COG Region

The following outlines the regional market for each of the future uses considered:

- **Multi-use Trail** – As previously noted, it is estimated that most multi-use trail utilization is dominated by local users. However, given the scenic environment of the Valley Railroad State Park, a multi-use trail along the corridor could draw more visitors from outside the region than is typical.
- **Freight Rail** – Through stakeholder discussions and interviews conducted for this study, it was identified that there is only one likely existing user of freight rail service along the corridor from outside the region, which is Tilcon. As noted in Section 1.3 in Appendix A, although the Valley Railroad would provide a more direct route for trains from Eastern Connecticut to the Middletown area, it may not be a more efficient route and currently there is not a high-level of freight demand driving the need to connect those locations

⁵ *Trail Utilization Study, Farmington Valley Trails Council, 2007*

⁶ *Farmington Valley Trail Usage Study, Farmington Valley Trails Council, 2013*

more directly⁷. Past discussions related to VRR support for the market outside the region was focused on potential efficiencies and capacity needs in the statewide network. However, after the unsuccessful TIGER grant application in 2009, Connecticut's Department of Transportation removed freight from its plans for the corridor in the 2010 State Rail Plan.

- **Scenic Rail** – The Essex Steam Train, which provides over 150,000 trips⁸ each year to visitors is one of the most visited scenic trains in the country. However, it is not evident that expansion of the service route would lead to an increase in the number of passenger trips.⁹ Furthermore, Valley Railroad has not identified or proposed any specific expansion of services.

Capital Cost

The following outlines the capital costs for each of the future uses considered:

- **Multi-use Trail** – The Valley Railroad State Park Scenic Corridor Study estimated the cost for the 9 mile trail at \$5 to \$30 million for the trail without rail alternative. It is assumed that the costs for the “trail with rail” alternative would be on the higher portion of that range, in the \$20 to \$30 million and would likely be even higher to address the added components needed to separate the trail from the rail.
- **Freight Rail** – The estimated cost for rehabilitation of the Valley Rail Line for freight rail use is approximately \$30 million. Additional costs may be required for restoration of the state-owned Laurel Branch, depending on the type and destination of the freight service. See Section 2.2.2 of Appendix B for additional information.
- **Passenger Rail** – The estimated cost for restoration of the Valley Rail Line for passenger rail use is in excess of \$30 million. This cost is only for the track related work along the Valley Railroad and does not include construction of accessible stations/platforms, maintenance facilities, signal systems or the cost to rehabilitate the other branch lines necessary for passenger rail access to Hartford. See Section 2.2.4 of Appendix B for additional information.
- **Scenic Rail** – The estimated cost for track restoration for the extension of the scenic rail service along the entire length of the Valley Rail Line is approximately \$5.3 million. See Section 2.2.3 of Appendix B for additional information.

Joint Use with Essex Steam Train/Impact to VRR

As part of the original vision in creation of the Connecticut Valley Railroad State Park, the state has leased out the rail corridor to the Valley Railroad for the operation of scenic rail services. To remain consistent with the original designation of the park and the federal Land and Water Conservation Funds (LWCF) grant used in support of the property acquisition, any future use of the rail corridor would need to ensure the ability to use the line for scenic rail purposes. Additional

⁷ This evaluation is based on existing freight market and transportation network conditions and could be different in the future due to a change in economic factors that affect shipping logistics in Connecticut.

⁸ Unique visitor trips on the Valley Railroad as reported by Valley Railroad to the Federal Railroad Administration, (the visitor count is for round-trips and does not double count trips for passengers that may get off the train to ride the steamboat).

⁹ For estimation purposes in Appendix B, the HDR Team utilized a 10 % increase in ridership as a way to measure the potential impacts of increased ridership, and not as a specific forecast of demand for expanded service.

detail regarding the LWCF funding and impacts of future uses is included in Section 1.7 in Appendix A.

- **Multi-use Trail** – Use of the northern nine miles as a Multiuse “trail with rail” could be consistent with the continued joint use of the line for scenic rail services. In the design of the trail it would be necessary to ensure that the trail location maintains adequate separation between the two uses for both the safety of the trail users and the operational needs of the railroad. However due to the limitations of the corridor, the trail may need to be located outside of the rail right-of-way in some segments. As noted in the Valley Railroad State Park Scenic Corridor Study “At constraints (bedrock outcrops or steep slopes), the trail diversions from the corridor onto local roads or through a separate right-of-way and rejoins the rail corridor farther on.”¹⁰ The study also noted that “with state ownership of the corridor and the long-term lease of the property to Valley Railroad Company, any future trail would be contingent on interest, involvement, and support from both of these entities.”¹¹
- **Freight Rail** – The Valley Railroad has the rights to operate freight as part of their scenic rail service lease with the CT DEEP. In addition, the National Park Service has stated in the past that “occasional” freight service would be consistent with the federal LWCF investment in the park. The scheduling for the freight service would need to be managed so that the freight trains do not negatively impact the scenic services.

In addition having the potential to operate freight along the corridor as part of their long-term lease, the Valley Railroad has the requirement to provide freight rail service or allow others freight rail service access, if requested by the State. As noted in the lease, prior to the initiating operation of freight service, the Valley Railroad Company would be required to obtain common carrier status from the U.S. Department of Transportation’s Surface Transportation Board (STB). Obtaining common carrier status for the Valley Railroad would result in some substantial operational changes to the railroad. This would include their annual and seasonal maintenance requirements, reporting requirements, possible capital improvements (including the potential need for a Positive Train Control system), and potential changes to their labor structure and ability to utilize volunteer labor. It is HDR’s estimation that establishing the railroad as a common carrier would dramatically increase the railroads’ cost to a level that if substantial revenues were not generated by the freight rail service, that the long-term viability of the company could be questioned.

- **Passenger Rail** – The issues identified related to freight rail, as stated above, would be similar for the introduction of passenger rail service. In addition, passenger facilities along the line would need to be constructed that are compliant with the Americans with Disabilities Act.

Local Highway Traffic Reduction

Any impact on the local highway traffic volumes are likely to be minimal for any of the future options. Although the Freight Rail Expansion option has the potential to eliminate some truck trips originating from the area, and the Excursion Train Extension has the potential to increase some trips for people destined to the area, the volume changes are so small that would likely not be noticeable or perceptible.

¹⁰ Valley Railroad State Park Scenic Corridor Study, 2014, page 112.

¹¹ Valley Railroad State Park Scenic Corridor Study, 2014, page 112.

State-wide Transportation improvements

- **Multi-use Trail** – Construction of a Multiuse trail along a portion of the corridor would expand the network of bicycle and pedestrian facilities in the region, however since the segment does not connect major destinations, use of the trail would be focused on recreation purpose and not transportation.
- **Freight Rail** – Utilization of the Valley Rail Line for freight rail purposes could enhance the Connecticut rail network connectivity and capacity in the future. Although there is limited possible demand for freight rail use of the line presently, there is a potential that demand for the line to be used as a freight rail link could grow. As greater demands are placed on the Amtrak Shoreline and the New Haven-Hartford-Springfield Line for passenger purposes, the remaining capacity to be used for freight will be reduced. In the case that there is both a reduced freight rail capacity on the Shoreline and an increase in volume of freight movements between Old Saybrook and Hartford, an increase in interest in using the line for freight service could arise.

Tourist Economy Impacts

Tourism in Connecticut is estimated to generate \$1.2 billion in state and local revenues and 110,775 total jobs annually. This economic activity can be generated by different events, venues, and attractions in the state.

- **Multi-use Trail** – The Connecticut Center for Economic Analysis is currently conducting a study that may provide information related to the potential economic impact of a multi-use trail. A Maryland study cited by Connecticut Department of Energy and Environmental Protection suggests that overnight multi-use trail visitors spend \$114 per day and day trippers spend \$17 each trail use.¹²
- **Passenger Rail** – Limited tourist economy impacts.
- **Freight Rail** – Freight rail service has the potential for limited negative impacts to the tourist economy, but is more likely that there would be no impacts.
- **Scenic Rail** – There were 159,030 train riders in 2014. A recently completed survey indicated that scenic rail visitors spend approximately \$28.32 per person¹³. A typical traveling party spends \$142.77. Based on these estimates, Essex Stream Train visitors directly spent \$4.5 million in 2014. This does not include the induced and indirect spending that would be generated by this direct spending.

Commercial Development

- **Multi-use Trail** – Presence of a bike path combined with significant efforts to encourage bicyclists to visit the Connecticut River Valley could provide opportunities for expanded retail development in communities along the River.

¹² "Maryland of Wonder," East Coast Greenway Alliance, Baltimore, MD, April 27, 2013, http://www.ct.gov/deep/lib/deep/greenways/east_coast_greenway_alliance.pdf,

¹³ \$28.32 is used in this study as an estimate of the per capita expenditure for an Essex Steam Train rider. This is based on a survey and analysis conducted for the recently completed 'Circus Train Intercept Survey.

- **Passenger Rail** – Some commercial/retail development could occur in and around potential passenger rail train stations, but it would likely be limited to businesses providing amenities to riders and relatively small in scale.
- **Freight Rail** – Some industrial development could be generated but would likely be very limited. Some existing, abutting, commercial development could be repurposed for industrial uses if freight rail service on the VRR was available, based on interviews.
- **Scenic Rail** – Similar to the presence of a bike path, some retail development in communities along the River could be generated if additional scenic rail service was provided and efforts were made to market the Valley to train enthusiasts. It should be noted that Essex Steam Train is one of the larger scenic railroads in the country currently.

Job Creation

The Council of Economic Advisors provides metrics that may be used to estimate the potential jobs generation impact of public investments. They estimate that a public infrastructure investment of \$76,923 generates one job-year (i.e., one job for one year). Long-term job creation for any of the future uses would likely be limited by themselves, although they assist as part of a larger regional development and job creation strategy for the region.

- **Multi-use Trail** – The estimated investment of \$20-\$30 million in trail construction would generate 300-390 job-years. If the costs were determined to be higher for the “trail with rail” alternative, the job creation would increase proportionally.
- **Passenger Rail** – An investment of more than \$30 million in construction for the upgrade of the Valley Railroad right-of-way would generate more than 390 job-years. Greater construction job creation values would be anticipated, since additional improvements would be necessary to implement a passenger rail system.
- **Freight Rail** – \$30 million investment in construction generates 390 job-years
- **Scenic Rail** - \$5.3 million investment in construction generates 69 job-years.

Environmental Impacts

Direct environmental impacts related to alternative future uses of the corridor are likely to be limited. Construction of both rail lines and multi-use paths can generally be undertaken in a manner that will minimize or eliminate direct environmental impacts. Although there is likely to be some limited disturbance to wetland and floodplains along the corridor, the magnitude or any construction would not be to a level that appropriate mitigation could not be provided.

In addition to direct environmental impacts, the environmental risk related to the potential future uses varies. As noted in Section 2.3 of Appendix B, there is environmental risk related to accidents and derailments along the railroad, especially as it runs alongside the river. In general environmental risk increases with the increased use of the section of track immediately adjacent to the river and increases even more with the introduction of hazardous cargo being transported along that section. Once the line is established as part of the general railroad network and freight rail service is introduced, it is not possible for local entities to establish hazardous material restrictions along the line.

Land Use Impacts

- **Multi-use Trail** – A multi-use trail would be unlikely to impact current land use.
- **Freight Rail** – If freight rail service were established, land use would not likely be impacted other than the potential for existing office space along the railroad to be utilized for more industrial purposes.
- **Passenger Rail** – Passenger rail service could generate some allowable retail/commercial activity in and around station areas.
- **Scenic Rail** – Scenic rail is unlikely to impact existing land use.

Impact to Land Values

- **Multi-use Trail** – Property taxes stemming from vistas dependent on DEEP managed venues added \$4.2 million to state revenues. Owners of single residences in Connecticut derived amenity values of \$270 million annually from overlooking DEEP managed venues.
- **Passenger Rail** – Evidence from property price analyses suggest that proximity to transit tends to increase property prices, especially within one quarter-mile of a station, but this increase depends on a variety of site-specific conditions such as attributes of the transit system, the surrounding neighborhood, and the municipalities. For properties located within one quarter-mile to one half-mile of a commuter rail station, property value premiums in a number of studies were in the 6.5-10% range. In some conditions, this property value premium has been seen as high as 23 percent for residential properties in close proximity to commuter rail. Given the rural nature of the Connecticut River Valley, community interest in limiting development, low population density, and limited traffic congestion, property value increases associated with passenger rail service would likely be on the relatively lower end of the range if achieved at all.
- **Freight Rail** – Research on the property value impact of freight rail is limited though studies have suggested a 4-8% decrease in values for properties close by an active freight railroad. Within 750 feet of railroad ROW, there are approximately 500 homes. Based on town mill rates and average assessed values, a 4-8% property value decrease is \$128,000-\$257,000 in lost property tax revenue, spread across the towns. The biggest impact would likely be in Haddam.
- **Scenic Rail** –Currently, tourist rail service is offered on the lower end of the Valley Railroad ROW, and the existence of the active railroad is likely reflected in property values. This is likely not the case on the northern end where the railroad is presently inactive. Of the 518 properties located within 750 feet of the VRR ROW, 230 are located on the northern, inactive end of the railroad in Middletown, Higganum and Haddam. If tourist excursion service was expanded to the north, it is possible that property values would be impacted in these communities. While tourist excursion and freight rail are different, both services do generate noise and other impacts that may adversely affect abutters. However, using the same methodology employed for freight rail, expanded tourist operations to the north could potentially decrease property tax revenues for Haddam, Higganum, and Middletown by \$55,000 to \$110,000. Higganum and Haddam likely would be most impacted, as all but two properties on the northern end of the ROW are located in these towns. The decrease in Middletown is estimated to be no more than \$1,200. Because tourist and freight rail services differ from a safety and frequency

perspective, however, this estimate is likely higher than would be expected with expanded tourist rail service

Safety Impacts

- **Multi-use Trail** – A multi-use trail would not be likely to result in significant safety impacts. With a properly designed trail, safety of trail users would not be an issue and since most of the users would likely be new riders (as opposed to diverted from local adjacent roadways) there would be no significant safety savings from bicyclists diverted onto the trail. If the trail encouraged visitors from outside their region, it would likely result in an increased number of automobiles on the Valley's roadways. While some bicyclists may access the trail via bicycle, many would likely drive to a starting point to access the trail. The impact to society would be contingent on the number of new automobile drivers on the Valley's roadways who are accessing the trail and how many existing bicyclists would be diverted to ride on the trail.
- **Freight Rail** – For long-distance freight transportation, rail is generally considered safer than truck transportation. Moving trucks off the roads typically provides a positive public benefit. For individual abutters to the ROW, no rail service is safer than some rail service. The operation of freight would increase the number of at-grade crossings, however due to the low volume of the roadways, and the projected low-volume of the projected freight, the safety risk at the crossings along the corridor is fairly limited.
- **Passenger Rail** – The existence of passenger rail typically provides a positive public benefit because automobile traffic is reduced. For individual abutters to the ROW, no rail service is safer than some rail service.
- **Scenic Rail** – Expanding scenic rail service could potentially have safety impacts for abutters to the ROW due primarily to the increased train traffic over the at-grade crossings. The impact to society would be contingent on the number of new automobile drivers on the Valley's roadways who are accessing the tourist railroad. For individual abutters to the ROW, no rail service is safer than some rail service.

Aesthetic Impacts

- Aesthetic impacts would be fairly limited with the future use options of the Multi-use trail or the Expanded Scenic Rail service. The construction for both of these options would not change drastically from its existing condition and operations along the line would be similar to what is seen along portions of the line currently.
- Construction of the infrastructure needed for freight or passenger service would generally not be dramatically different from what is experienced elsewhere along the line. However the change of the line to a railroad with common carrier status may change some aspects of the corridor See Section 1.7.2 of Appendix A regarding a discussion of possible changes.

Land and Water Conservation Fund Implications

Description of the Land and Water Conservation Fund (LWCF) and the impacts on the future use of the corridor is provided in Section 1.7.1 of Appendix A.

- **Multi-use Trail** – Since the primary use of the corridor was originally for scenic rail service, it would be important that development of a trail along the corridor would not



preclude scenic rail operations. Use of the northern portion of the corridor for a multi-use trail would not likely result in a conversion of the property under the LWCF program as long as the scenic rail operation was not affected to the degree that service along the remaining portion of the line was no longer feasible. Determination of conversion would be made by the National Park Service, in coordination with the CT DEEP, at the time that a specific change in use proposal was made.

- **Freight/Passenger Rail** – The primary purpose of LWCF support was for scenic rail operations, and therefore, exclusive freight or passenger rail operations (without allowing for scenic rail operations to continue) would constitute a conversion of the property. However, the National Park Service has identified that “occasional” freight service would be consistent with the federal LWCF investment in the park.

Chapter 5 Next Steps

The purpose of this study was to provide information on the potential of the corridor to contribute to economic development in the region and to assess the feasibility of particular potential uses that could occur within the Valley Railroad State Park and along the railroad line. These other uses included:

- Construction of a multi-use trail,
- Expanded use of the rail line for freight purposes,
- Expanded uses of the rail line for passenger rail purposes, and
- Extension of the rail line for continued scenic rail service.

In the course of undertaking the study, some issues arose that will influence the assessment of the information compiled within this study.

Future of commercial/industrial development in the Lower Connecticut Valley area. As noted in the description of *the History of Demand for the Valley Railroad*, it was identified that the region has historically been insulated from the New York – Boston corridor and commercial and industrial development has been relatively limited. However, as increased globalization occurs, the relative proximity of the Lower Connecticut region to major metropolitan markets and large port facilities becomes an increasing advantage. Is it the goal of the region to capitalize on its location as a way to increase commercial and industrial development? An economic development strategy that focuses on commercial and industrial development would be both supportive of and supported by freight rail service along the Valley Railroad.

Coordinated approach to bolster tourist-based economy. As noted in the report, the Essex Steam Train is one of the more visited scenic rail services in the country and the number of visitors have been climbing annually. The impact of the scenic rail service on the local economy is directly influenced by the interest and ability for visitors to remain in the area and patronize other area businesses. Is there interest or a strategy to capitalize on the attraction of the Essex Steam Train service (either as currently operated or expanded) to entice visitors to stay in the area as a possible way to boost the local tourist-based economy? The benefits of the Essex Steam Train to the region are directly tied to additional visitor spending.

Improved Connections to the Valley Railroad State Park. There were two future options identified that include increased public access to the corridor; the multi-use trail and an extension of the scenic rail service with additional stops. The ability of the region to maximize benefits from those options would include the development of a strategy to increase community connectivity to the corridor. This could include improved pedestrian/bicycle access to select locations or increased commercial development along the corridor (or in select locations). Is there a strategy to develop ways to improve community connectivity to the corridor? Do negative impacts associated with increased access to the corridor alter the benefits of the future option?

Regional support for growth strategy. The future options for the Valley Railroad State Park influence and are affected by land uses and economic development in the entire region. To maximize public investment in the Valley Railroad a future option should be identified that can work in concert with a future development and land use strategy for the region. Is there a strategy or a series of strategies for the region, for future growth and development? Although the



Valley Railroad is a unique regional asset, it is not substantial enough so that a different future use would be economically transformative for the region. Assessment of the Valley Railroad benefits to the region will depend upon how the future uses work in conjunction with other businesses and opportunities in the region.

Detailed costs and benefits requires detailed development proposals. Detailed analysis regarding regional and local benefits of a specific action require detailed information regarding a specific project. Although potential costs and benefits can be identified in a general sense based on policy levels actions, detailed assessments required greater level of detail and typically can not be conducted until a specific project has been identified. Understandably this uncertainty makes policy development difficult. In the context of future uses of the Valley Railroad State Park, could future use scenario's be developed and advanced that allow for flexibility as more detailed information becomes available?

Coordination of future uses with property owner and lease holder. As identified in the introduction of the study, the Connecticut Department of Energy and Environmental Protection (CT DEEP) owns the state park and rail line. Additionally the property is under a long-term lease to the Valley Railroad Company (VRR) for the operation of a scenic railroad service called the Essex Steam Train. Any changes to the current use of the property in the near future that differs from the goals and rights of these two entities will require close coordination and a thorough understanding of how proposed changes will benefit or adversely affect the current operations.

Appendix A. Current and Future Economic Assessment

This Appendix describes the current freight and passenger rail system in Connecticut, the region, and local area around the Valley Railroad State Park. Existing conditions data collected for this study is presented, as well as findings from interviews and previously completed studies. An overall assessment of the opportunity to develop a passenger rail system beyond the excursion service currently provided on the Valley Railroad (VRR) Line is offered, as well as information related to the potential market for freight rail service on VRR infrastructure.

1.1. Freight Rail Market Analysis

If improvements are made to the existing VRR infrastructure, opportunities to expand freight rail service may exist. Understanding the market for expanded freight rail service, however, depends on a combination of freight-related data analysis and the findings of interviews held with potential freight rail users.

A description of overall freight flows into, within, and out of Connecticut, as well as information that is more specific to the Lower Connecticut River Valley (LCRV) Region is provided in the following sections. In addition, a discussion of the potential demand for freight rail operations along the full length of the VRR Line is provided.

1.1.1. Connecticut and Northeast Freight Market

Over the past 20 years, the freight transportation industry in the United States has undergone significant change. Consolidation and restructuring of freight transportation modes has occurred, in part due to shifts toward “just-in-time” delivery, “containerization,” the changing regulation of many freight transportation industries, and the global economy. When possible, shippers may trend toward intermodalism using more cost-effective rail, air, or water transport for the long-haul portions of freight transportation and relying on trucks for the ends of rather than the entire trip.

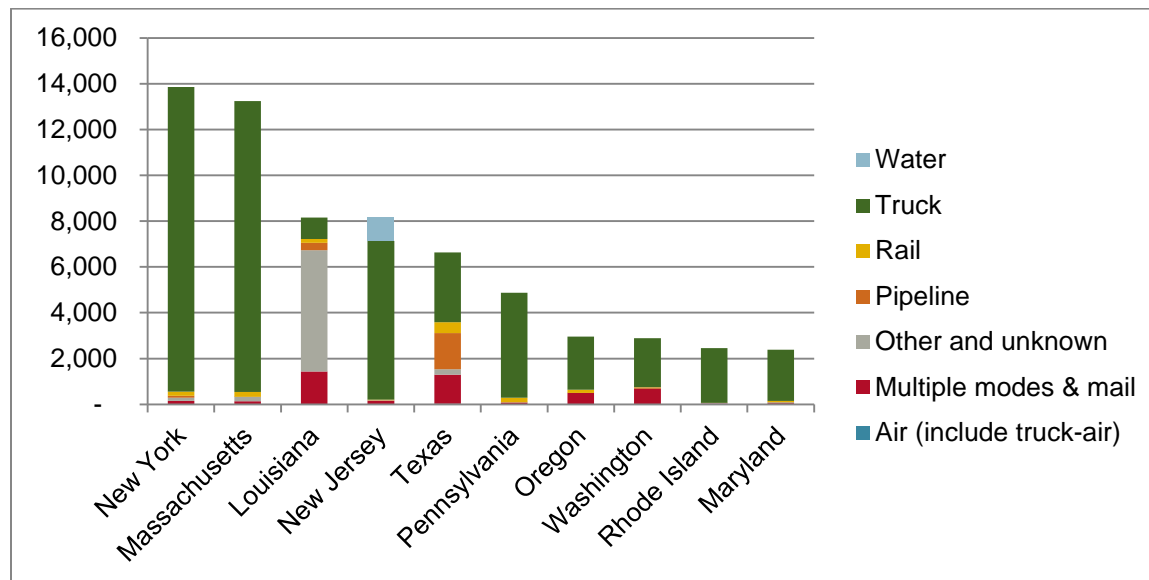
Connecticut is a relatively small geographic area located in close proximity to some of the nation’s largest cities, ports, intermodal rail facilities, and airports. This positioning contributes to the state’s relative reliance on truck transport for freight, and its tendency to be a part of primarily the truck portions of intermodal freight trips.¹⁴ Nonetheless, marine ports, railroads, airports, and pipelines also provide transportation for cargo moving into, out of, and within Connecticut, just at a relatively smaller scale.

1.1.2. Connecticut Freight Imports & Exports

According to the Federal Highway Administration (FHWA) Freight Analysis Framework (FAF) data for 2012, 90.3 million tons of freight was moved into or out of Connecticut. This equates to \$195 billion tons of freight value being moved. As shown in Figure 1.1, New York, Massachusetts, Louisiana, New Jersey, and Texas are the top five trading partners with Connecticut based on freight tonnage, with most of this freight being shipped by truck.

¹⁴ *Rail Freight in the Housatonic Region, prepared for the Housatonic Valley Council of Elected Officials (HVCEO) by HARTransit, July 2011.*

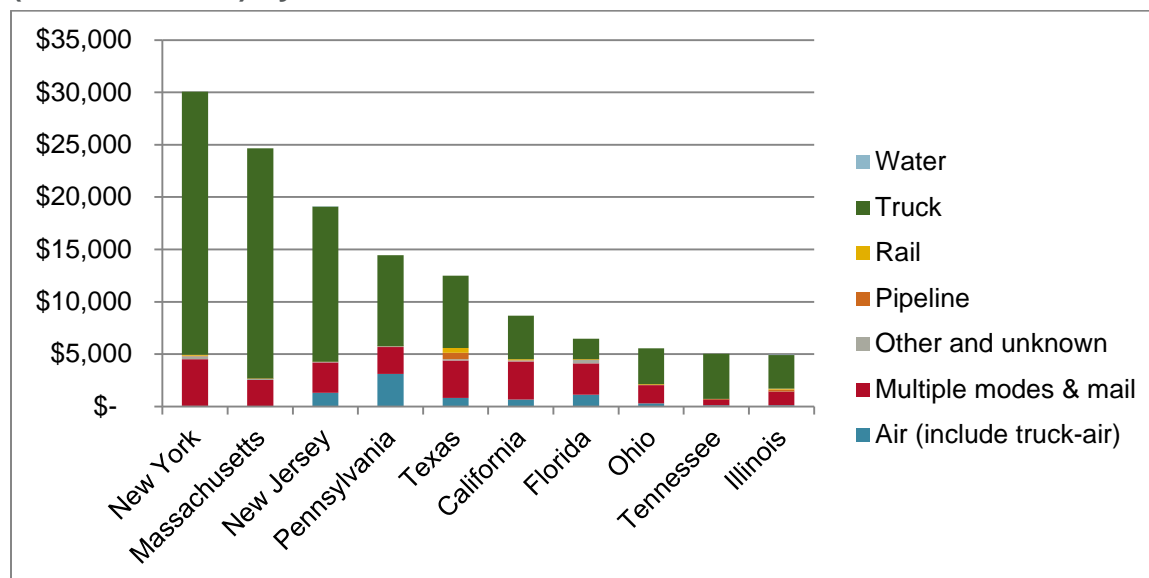
Figure 1.1: Top Ten Trading Partners with Connecticut based on Freight Weight (000s Tons) by Mode



Source: FHWA, Freight Analysis Framework, 2012.

The top two trading partners, New York and Massachusetts, are consistent regardless of whether they are ranked by weight or value. As shown in Figure 1.2, the third differs; Louisiana ranks third based on weight, while New Jersey ranks third based on value. As was the case when analyzed by weight, truck remains the most typical mode chosen to move freight from or into Connecticut.

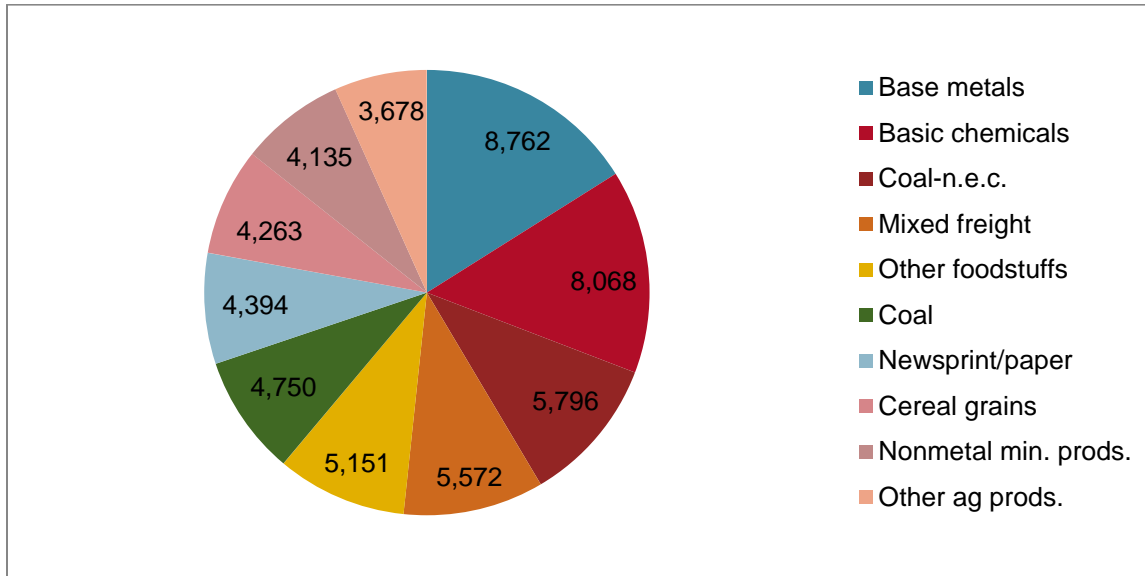
Figure 1.2: Top Ten Trading Partners with Connecticut based on Freight Value (Millions 2012\$) by Mode



Source: FHWA, Freight Analysis Framework, 2012.

As shown in Figure 1.3 below, Base metals and Basic chemicals represent the two largest types of commodities shipped into or out of Connecticut, regardless of direction and mode of transportation, when based on weight. Other top commodities include petroleum/coal products (Coal n.e.c.), Mixed freight, and Other foodstuffs.

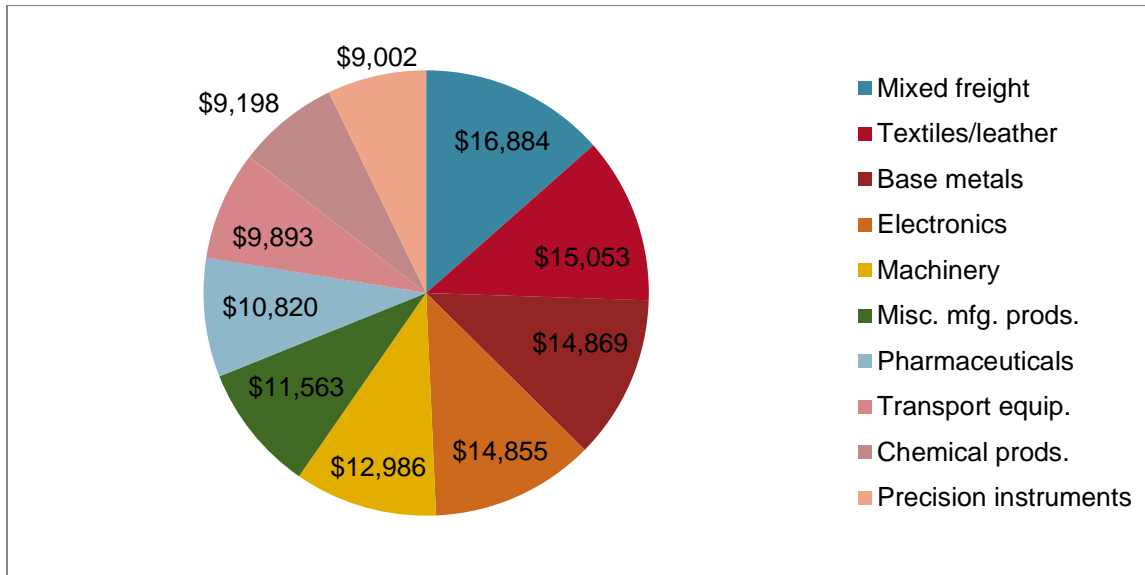
Figure 1.3: Top Ten Commodities Shipped into and out of Connecticut based on Weight (000s)



Source: FHWA, Freight Analysis Framework, 2012.

As shown in Figure 1.4, Mixed freight, Textiles/leather, Base metals, Electronics, and Machinery account for the largest share of overall freight value regardless of the mode utilized.

Figure 1.4: Top 10 Commodities Shipped into and out of Connecticut based on Value (Millions 2012\$)



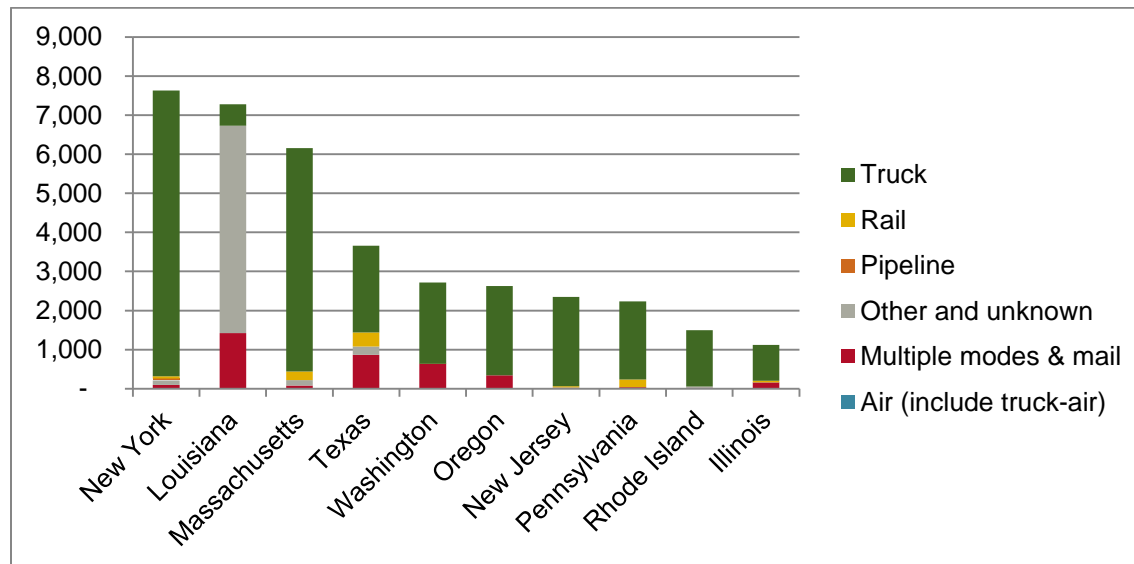
Source: FHWA, Freight Analysis Framework, 2012.

When direction of freight flow is examined for the state, there are some slight differences in trading partners and commodities shipped. The relative dominance of truck as the freight mode of choice, however, remains unchanged.

Connecticut Freight Exports

More than 46.6 million tons of freight moved out of Connecticut, based on 2012 FHWA FAF data. Much of this freight is bound for states in the northeast, such as Massachusetts, New York, New Jersey, and Rhode Island. Nearly all of this freight tonnage is currently moved by truck as shown in the figure below. As shown in Figure 1.5, other top destinations include Louisiana, Texas, Washington, and Oregon.

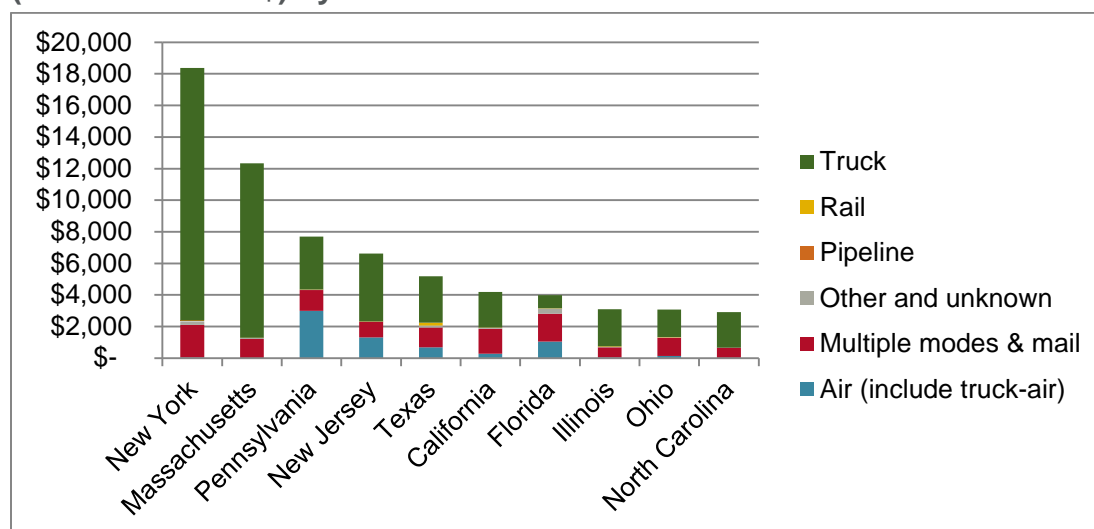
Figure 1.5: Top Ten Destinations for Connecticut Exports based on Freight Weight (000s Tons) by Mode



Source: FHWA, Freight Analysis Framework, 2012.

When analyzed, based on value, top destinations are still primarily northeastern states. Key exceptions are Texas and California. Not surprisingly, most of the highest valued freight is moved by truck, multiple modes, or air, as shown in Figure 6 below.

Figure 1.6: Top Ten Destinations for Connecticut Exports based on Freight Value (Millions of 2012\$) by Mode



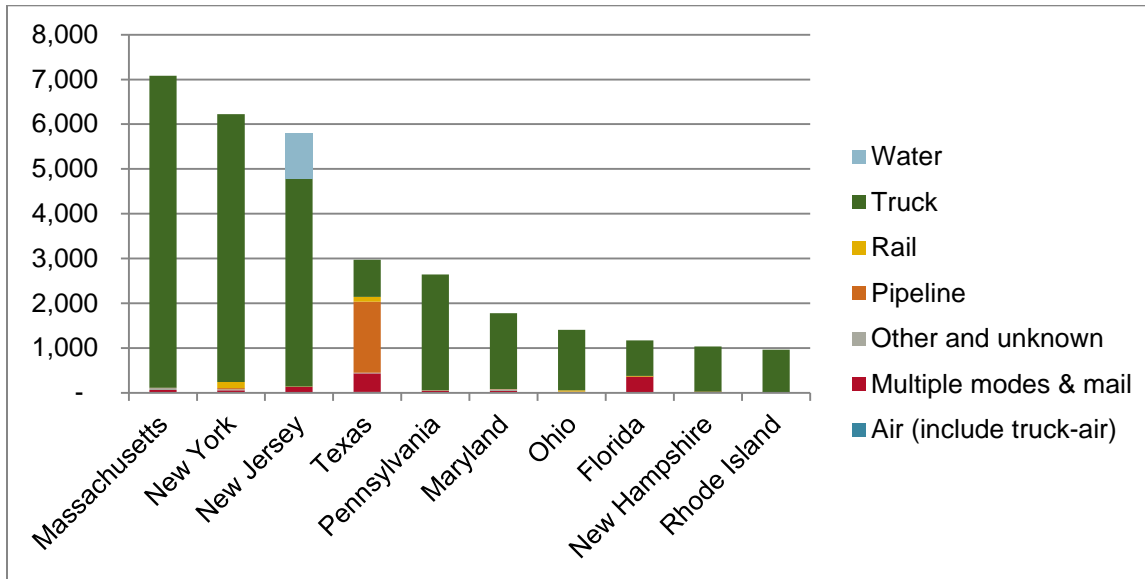
Source: FHWA, Freight Analysis Framework, 2012.



Connecticut Freight Imports

More than 43.7 million tons of freight was imported into Connecticut based on FHWA FAF data for 2012. Most of this entered the state by truck from other states in the northeast, Massachusetts, New York, and New Jersey. Truck transports most of the freight into the state, although Natural sands from New Jersey arrive to the state via water. As shown in Figure 1.7, Texas ranks the fourth highest, in terms of import tonnage into Connecticut. The majority of this freight, based on tonnage, arrives via pipeline. Specifically, Fuel oils and Coal-n.e.c. come into the state via pipeline from Texas.

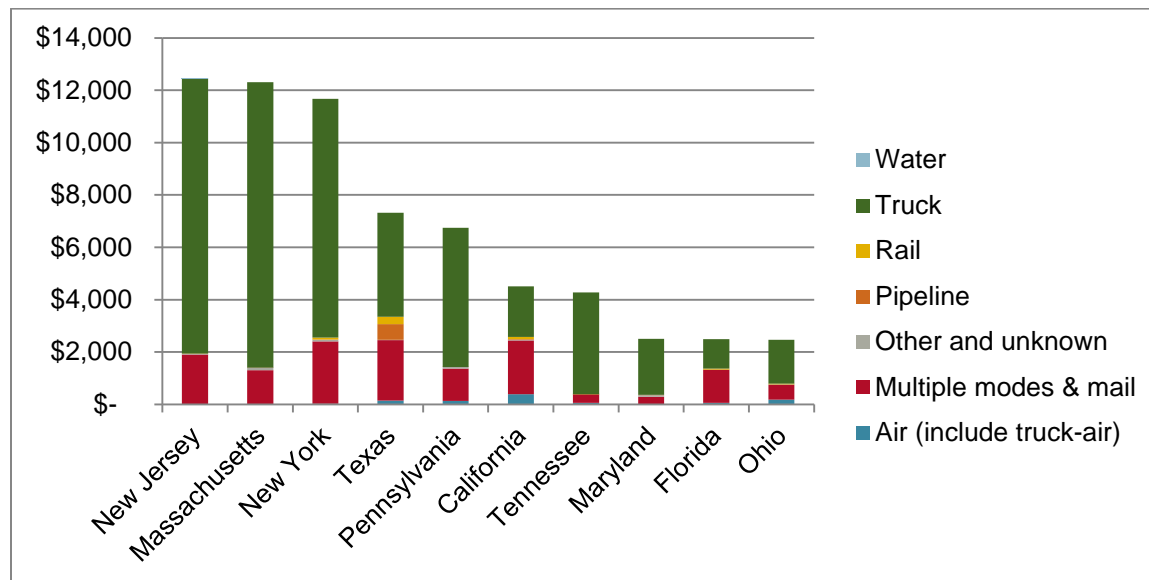
Figure 1.7: Top Ten Origins for Connecticut Imports based on Freight Weight (000s Tons) by Mode



Source: FHWA, Freight Analysis Framework, 2012.

Even when analyzed based on value, the top three states importing freight into Connecticut are New Jersey, Massachusetts, and New York. As shown in Figure 1.8, most of this freight travels by truck or multiple modes.

Figure 1.8: Top Ten Origins for Connecticut Imports based on Freight Value (Millions 2012\$) by Mode



Source: FHWA, Freight Analysis Framework, 2012.

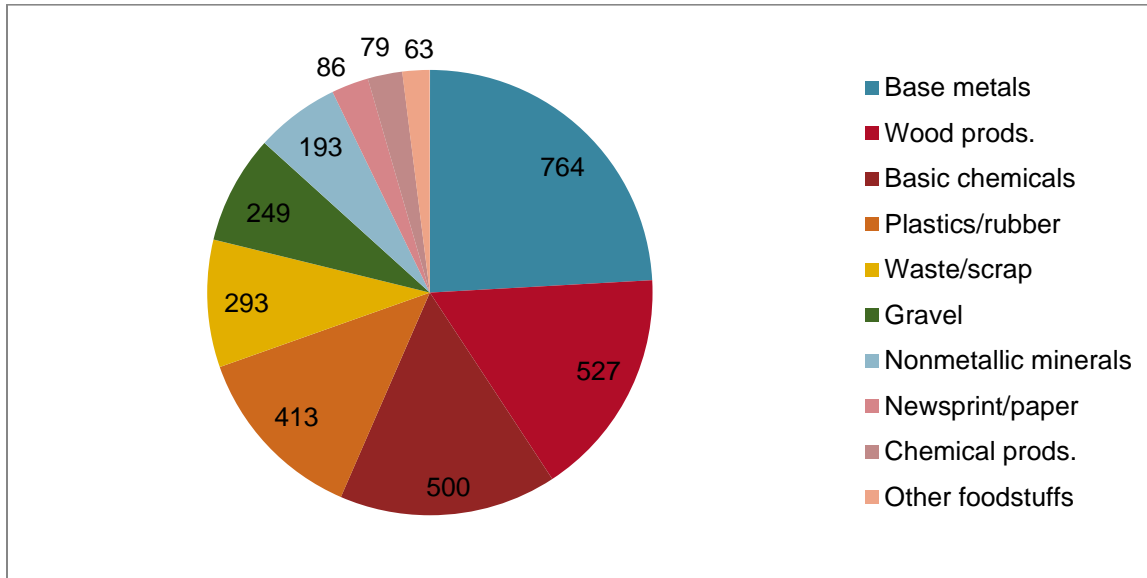
1.1.3. Rail Freight Into and Out of Connecticut

Freight is shipped via rail into and out of the state, though this mode represents a much smaller share of overall freight shipped. Of the 90 million tons of freight shipped into and out of Connecticut in 2012, only about 3.5 million tons was shipped by rail. Texas, Illinois, Georgia, Massachusetts, and Vermont were the top trading partners with Connecticut for freight transported by rail, based on weight. Basic chemicals accounted for the largest share of Texas tonnage, base metals for Illinois, and Wood products for GA. Rail tonnage transported to and from Massachusetts was almost entirely Gravel. Vermont commodities were more varied, Wood products, Base metals, Basic chemicals, as well as others.

When assessed based on value instead of weight, four of the top five trade partners were the same, with Massachusetts, being replaced by Louisiana. The primary commodities for each state were also the same for all states. Louisiana, as with Vermont, had a varied mix of commodities being moved with no one commodity dominating the trade.

Regardless of trading partner, Base metals accounted for the largest share of overall freight rail based on weight. As shown in Figure 1.9, Wood products and Basic chemicals were also a significant share of the top commodities.

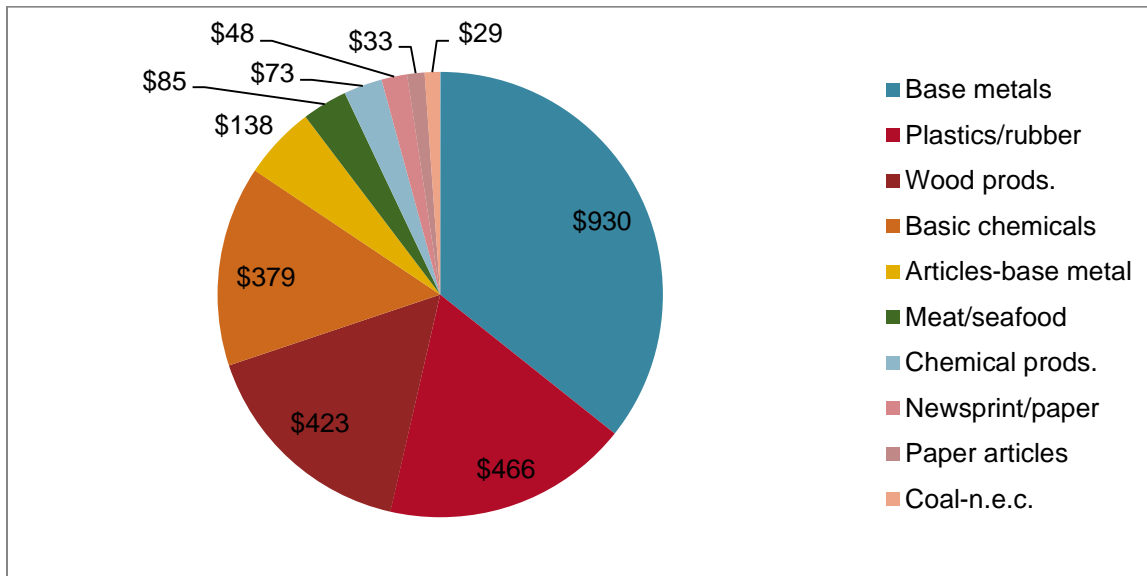
Figure 1.9: Top 10 Commodities Shipped by Rail into and out of Connecticut based on Weight (000s tons)



Source: FHWA, Freight Analysis Framework, 2012.

When ranked based on value, and shown below, Base metals accounted for the largest share of freight rail value, followed by Plastics/rubber and Wood products. The top ten commodities shipped by rail based on value are shown in Figure 1.10.

Figure 1.10: Top 10 Commodities Shipped by Rail into and out of Connecticut based on Value (Millions 2012\$)



Source: FHWA, Freight Analysis Framework, 2012.

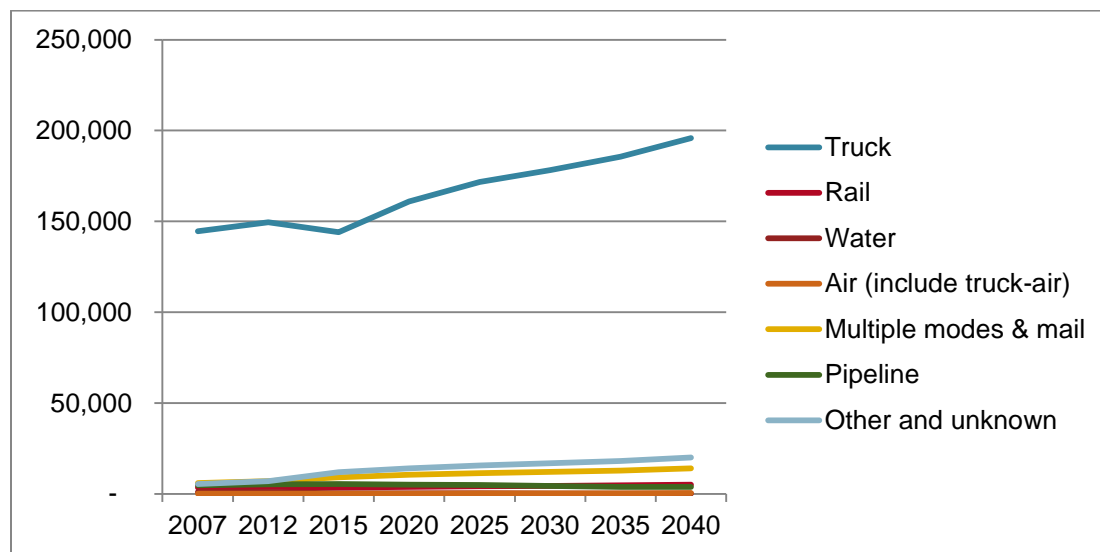
FHWA FAF data indicate that, based on current information available and overall trends, rail's share of freight tonnage into and out of the state is likely to decrease from 3.8 percent in 2012 to 3.1 percent in 2040. Multiple modes and mail, a category that does include some rail, is expected to increase during that same period by 1.5 percent. Generally, however, rail's share of tonnage in Connecticut is not

anticipated to grow significantly over the next 20 to 30 years. This is likely due to a number of factors, including that there is no double-stack rail freight service in Connecticut that could support increased rail freight service.¹⁵

1.1.4. Connecticut Freight Trends

As shown in the figures below, freight tonnage shipped into, out of and within Connecticut is expected to grow for all transportation modes, excepting water and pipeline. The most significant growth is expected to occur in air transport, with a 317 percent increase from 2012 to 2040. The category called “Multiple modes and mail” is also expected to increase more than 100 percent over that same period. Although growth in truck and rail transportation is less significant, both modes are expected to increase in terms of tonnage carried into and out of Connecticut. Truck tonnage is expected to increase by 31 percent and rail tonnage will increase by 36 percent between 2012 and 2040.

Figure 1.11: Connecticut Freight Tonnage Trends (000s Tons) by All Modes – 2007-2040

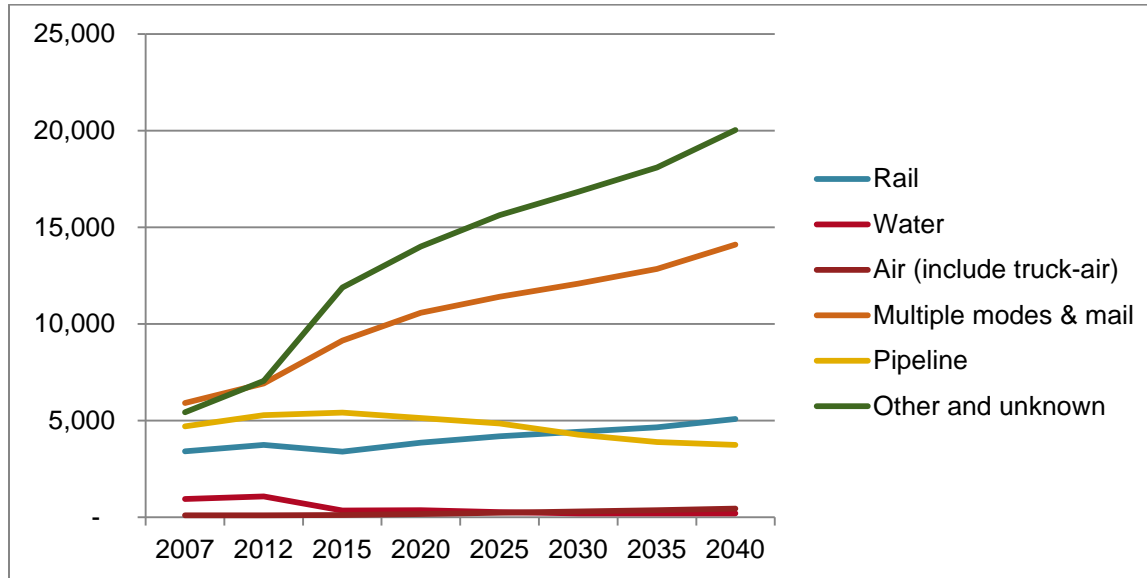


Source: FHWA, Freight Analysis Framework, 2012.

¹⁵ *New London State Pier, Technical Memorandum -- Economic Data Collection and Existing Conditions Assessment, FXM Associates, October 18, 2010.*



Figure 1.12: Connecticut Freight Tonnage Trends (000s Tons) by All Modes Except Truck – 2007-2040



Source: FHWA, Freight Analysis Framework, 2012.

Businesses throughout Connecticut and New England ship scrap metal, waste paper, stone, and other commodities that are well suited for rail transport. As discussed above, rail transport of freight is expected to grow in the state. Certain commodities are expected to see greater growth than others. For example, building stone tonnage shipped by rail is forecast to increase 96 percent between 2012 and 2040. Connecticut freight rail tonnage is also expected to increase for miscellaneous manufacturing products, milled grain products, precision instruments, natural sands, among other commodities.

This anticipated statewide growth in freight rail tonnage, particularly for commodities that are manufactured or mined in and around the VRR area, suggests that improving the state’s rail infrastructure to accommodate greater freight capacity may be justified over the next 25 years. Market forces demanding the types of commodities that are suited for freight rail transport will dictate the magnitude of the freight rail system improvements that are financially feasible to pursue.

1.1.5. Regional Freight Market

FHWA FAF data is not generally available for sub regions that are smaller than states. As a result, other sources were consulted to frame the general freight picture in the Hartford and LCRV regions and along the VRR Line.

Total Freight Market

In 2005, a freight study of the Hartford region was conducted. The study defined the Hartford region as including Windham, Franklin, Berkshire, Hampshire, Hampden, Hartford, Litchfield, New Haven, Fairfield, and Middlesex Counties. According to the study, like the northeast and Connecticut in general, truck is the dominant form of freight transportation in the Hartford region. This mode accounts for approximately

98 percent of freight traffic moving in, out, and through the area.¹⁶ While the study is several years old, indications are that truck continues to dominate in the Hartford and LCRV regions.

The regional economy is closely tied to the major metropolitan markets of Boston and New York, where high volume corridors (for both truck and rail) exist, but are short-haul in nature. This condition primarily favors shipment by truck over other modes, such as rail, because shorter distances are involved and the efficiencies of the other modes do not outweigh the flexibility of trucking. The Hartford area finding is consistent with the state's overall freight picture, which is largely truck oriented.

Based on the business demographics of the region, which lean toward service and public administration employment, most area shippers likely require multiple, frequent package and parcel deliveries. According to a freight study completed for the area, "shippers need to get products out quickly, while receivers seek to receive goods on a 'just-in-time' basis."¹⁷ These requirements tend to favor trucking. The study also indicated that inbound freight was more than twice that of outbound freight, reflecting a consumer and not a producer regional economy in the Hartford area. It also suggested that through traffic was considerable; 40 percent according to the study.¹⁸

Data specific to the VRR Line is not readily available, though the study team collected some information through an interview process with abutters of the VRR Line. Based on the interviews, shippers rely almost exclusively on trucks for their freight transportation needs. Many of the businesses located along the corridor are smaller manufacturers who are not in a position to generate the volume that would be necessary to utilize other transportation modes, such as rail, even if it was available. In addition, higher valued manufactured goods are produced and delivered in a just-in-time environment; this is not generally consistent with freight rail transportation. A complete discussion of the potential freight rail market is provided later in this report, but the overall finding is that most businesses along the VRR Line are currently relying on truck transportation for their freight needs.

Rail Freight Market

Although rail carload and rail intermodal transportation is available to shippers in the Hartford and LCRV Regions, the 2005 study indicates that the area's market shares are well below national averages. This is due to several factors identified in the study, which include structural and network constraints for the railroads, commodity mix, shipment size, and delivery requirements for local shippers and receivers. Specifically, rail service was estimated to account for only two percent of the total tonnage moved into, out of and through the Hartford region as defined in the study.¹⁹ Since all of Connecticut is located within an easy truck drive of the major port of New York/New Jersey many businesses that require rail shipments find that it is most efficient to have them delivered to the nearby port and deliver them by truck the remaining distance. Rail is most often used in Connecticut to ship materials over long distances that are not time sensitive, or where due to a products' weight it is more effectively moved by rail.

¹⁶ *Freight Movement in the Hartford Metropolitan Area, A Regional Freight Market Overview, prepared for the Capitol Region Council of Governments, Central Connecticut Regional Planning Agency, & Midstate Regional Planning Agency, prepared by Global Insight.*

¹⁷ *Freight Movement in the Hartford Metropolitan Area, A Regional Freight Market Overview, prepared for the Capitol Region Council of Governments, Central Connecticut Regional Planning Agency, & Midstate Regional Planning Agency, prepared by Global Insight.*

¹⁸ *Freight Movement in the Hartford Metropolitan Area, A Regional Freight Market Overview, prepared for the Capitol Region Council of Governments, Central Connecticut Regional Planning Agency, & Midstate Regional Planning Agency, prepared by Global Insight.*

¹⁹ *Freight Movement in the Hartford Metropolitan Area, A Regional Freight Market Overview, prepared for the Capitol Region Council of Governments, Central Connecticut Regional Planning Agency, & Midstate Regional Planning Agency, prepared by Global Insight.*

According to 2012 FHWA FAF data for the state, only one commodity type is moved by rail within the state. Specifically, 292,000 tons of fuel oil moved within the state, accounting for \$221 million in freight value for Connecticut. While the FAF data are useful for freight transportation analyses, there are some limitations, particularly with rail. For example, freight shipments by rail and water are categorized in “multiple modes and mail.” As a result, freight rail activity may be underrepresented in the “rail” category. In addition, some data may be suppressed or unavailable depending on factors such as business size.

The Hartford region study, as well as interviews conducted for this analysis, suggest that there are some opportunities to increase the utilization of rail for the region in the near term. According to the 2005 study, Central Connecticut area businesses took delivery of 15,000 loads that were delivered by rail to the West Springfield, Massachusetts intermodal facility and then trucked to their destination. Depending upon shipping costs and logistics, expansion or extension of this type of long-distance rail shipments may increase in demand in the Central Connecticut region. Anticipated congestion on main roadways connecting to major rail hubs, such as West Springfield or New York/New Jersey may mean that businesses with some flexibility to choose between modes may opt to expand rail use for freight transport. In terms of the VRR Region specifically, a few businesses located along the VRR corridor also suggested that they would use rail if it were available. A greater discussion of the interview findings is presented later in the chapter.

1.2. New London/Groton Freight Market

New London, Connecticut is a seaport city, as well as a port of entry for the northeast United States. It is located at the mouth of the Thames River in southeastern Connecticut, approximately 100 miles from Boston, Massachusetts, slightly more than 50 miles from Providence, Rhode Island, 50 miles from the state’s capital city, Hartford, and 180 miles from New York City.

Total Freight Market

Freight is transported in and around New London by roadway and rail. In addition, the Port of New London moves commercial cargos, such as gasoline, lumber, and copper. A study conducted in 2012²⁰ suggests that the Port of New London could support expansion of several key freight commodities, including wood pellets, break bulk lumber, copper and steel, as well as fresh food imports.

Although break bulk lumber, copper, and steel imports at the New London State Pier have declined since 2005, New London could increase lumber and/or copper imports if housing construction rebounds in the Northeast. Various steel imports, including plate steel, coiled steel, and “winter steel” (i.e., steel bound for the Midwest, but unable to access the frozen St. Lawrence Seaway during winter months), could also be handled.²¹ This additional freight could be moved from the port either by truck or by rail, potentially increasing the overall tonnage and value shipped into and out of the Port of New London area.

Rail Freight Market

In recent years, annual rail shipments originating or terminating within Connecticut have generated 50,000 carloads carrying 3-4 million tons of goods; however, there is no double-stack rail freight service in

²⁰ *Connecticut’s Deepwater Port Strategy Study, Prepared by Moffatt & Nichol for the State of Connecticut Office of Policy and Management, September 2012.*

²¹ *Connecticut’s Deepwater Port Strategy Study, Prepared by Moffatt & Nichol for the State of Connecticut Office of Policy and Management, September 2012.*

Connecticut, which could allow increased rail freight service.²² Some tracks in the state also have weight limits (263,000 lbs.), including the Connecticut segment of the New England Central Railroad (NECR), which serves the Port of New London. This weight limit restricts what can be moved and requires some carriers to take only partial loads or even partially unload freight to move it north from New London.

During the fall of 2014, however, the State of Connecticut was awarded \$8.2 million through the Transportation Investment Generating Economic Recovery (TIGER) funding program to improve the state's freight rail infrastructure. The grant will support important upgrades to connect New London, Norwich, Willimantic, and Stafford to the Canadian border via freight rail. Specifically, the project will upgrade the existing rail line to meet new freight standards, including increased weight capacity.

By upgrading 19 miles of outdated jointed rail now in service through Franklin, Norwich, Stafford, and Willimantic, Connecticut's section of the line will be brought up to the national standard. The project also upgrades the route by funding the installation of more than 15,000 new ties, and 15,000 tons of ballast through all of the towns along the route from New London to Stafford Springs. The estimated cost of this work is roughly \$10.3 million with a private railroad match totaling \$2 million. The remaining amount is being funded through the TIGER program.²³

As mentioned previously, a deep water ports study conducted in 2012 indicates that there may be a market for wood pellets transported through the Port of New London. This commodity can be moved by rail and is often exported in empty containers to control moisture content. While Maine seaports may have an advantage in this export market, NECR provides direct access to Canadian and northern New England forestry production centers and has ondock rail at the New London State Pier. Some improvements and investment in specialized handling equipment would be required to expand the handling of these commodities at the Port, but the improvements being made as a result of the TIGER grant may help support the overall freight rail infrastructure in Connecticut. However, it is unlikely that changes or increases in rail use in the New London/Groton area would be routed over the VRR corridor.

1.3. Re-routing of Rail Traffic to the Valley Railroad

1.3.1. Existing Rail Services

While the FHWA FAF data indicate that only fuel oils are transported within Connecticut, this data has some limitations and may underrepresent the intrastate freight rail tonnage that is being shipped. Based on other data and information, for example, stone is moved within and out of Connecticut. The Providence and Worcester Railroad (PWRR) handles much of this freight.

While Tilcon and PWRR did not provide information to suggest they would utilize freight rail service on the VRR, elements of their current operations were researched to better understand this potential. Because PWRR is the only freight railroad that serves the towns in the region, and because Tilcon has facilities located all over Connecticut, including in Old Saybrook, Connecticut, this company and its rail operation are of particular relevance to the study.

The PWRR moves stone from three Tilcon quarries: North Branford, Reed's Gap, and Plainfield. Stone is moved from these quarries to other points in Connecticut, as well as to New York.

²² *Connecticut's Deepwater Port Strategy Study, Prepared by Moffatt & Nichol for the State of Connecticut Office of Policy and Management, September 2012.*

²³ <http://www.courtney.house.gov/press-releases/connecticut-officials-announce-tiger-grant-for-new-england-central-rail/>, September 2014.

Based on information documented in the *Atlantic Northeast Rails & Ports*, the Branford Steam Railroad (BSRR) hauls, when operating at capacity, about six million tons of crushed stone out of the Tilcon-owned North Branford quarry to the Pine Orchard marshalling yard where the cars are re-arranged and then hauled to the Buchanan Marine barge facility. The stone is then moved to coastal Connecticut, Long Island, and New York. BSRR also moves Tilcon's interchange cars into its Yard in Brandford at the Amtrak interchange, where PWRR picks them up and delivers them to other Tilcon facilities or directly to customers.

PWRR also moves crushed stone out of Wallingford to Tilcon facilities and customers. Approximately 400,000 tons of stone go to Danbury, typically via Derby Junction. From the Plainfield quarry, PWRR hauls stone and sand outbound for Tilcon's Old Saybrook and Groton facilities and to Tilcon customers. The Old Saybrook facility is located in close proximity to the existing VRR.

Other rail-served Tilcon facilities include the Plainville North Mountain quarry, which has a small rail siding that is seldom used. Tilcon also has a PWRR-served receiving terminal in Danbury, as well as a separate asphalt plant one mile away. Approximately 400,000 tons per year of aggregate from Reeds Gap is used at the plant and some is sold directly to customers and then trucked out. There are other rail-served Tilcon facilities in Groton and Waterbury, and Tilcon has a receiving terminal, asphalt plant, and concrete plant located in Old Saybrook. Most aggregate comes in via PWRR rail to the Old Saybrook facilities, but some is trucked in as well. Outbound material is trucked.

The movement of stone using freight rail services in the state, as well as the fact that Tilcon is located in the VRR area, suggests that freight rail service at Tilcon's Old Saybrook plant may be an option. There are a number of factors to consider, however. First, Tilcon is able to meet its existing customers' needs using a combination of freight rail and trucking. It is not necessarily the case that freight rail service accessing Tilcon's Old Saybrook facility would guarantee a switch from truck to freight rail. Market forces and the comparative cost of truck and rail would determine whether Tilcon would utilize freight rail service on the VRR infrastructure. An increase in the demand for stone and other Tilcon products could also impact the company's decision to ship by rail or truck. Whether they would reroute to utilize the VRR right of way would again depend on the relative cost of truck and rail.

1.4. Market Potential for New Freight Rail Business along the Corridor

HDR conducted interviews with businesses located along the VRR Line who are potential candidates for using freight rail services. Light industrial, industrial, and waste businesses were the focus of the interviews.

Most of the businesses interviewed did not indicate that they would use freight rail if it were available. This is primarily because many of the light industrial businesses located along the Valley Railroad make special order products or produce on a scale too small for rail transportation to be viable. Larger companies, like Pratt and Whitney, produce time sensitive products that would not be well suited for rail according to company representatives. The owner of an industrial park located near the railroad indicated that present tenants would not be good candidates for freight rail but, because of the park's proximity to the railroad, the availability of freight rail service might mean a shift in tenant mix.

One business located along the VRR Line that did express interest in rail transportation was a scrap steel, stainless steel, construction, and demolition debris business. This particular business currently employs 32 people and has doubled in size over the past 15 years. They own their trucking fleet, which they use to make shipments to Pennsylvania, Massachusetts, Rhode Island, Connecticut, and upstate New York.

If freight rail was available, this business believes that it could be more national in scale. Currently, they ship roughly 10,000 tons monthly, but anticipate that rail would support significantly more shipments, depending on the availability of rail cars. The business is located less than a block away from the railroad, but they would need to construct a rail access siding and loading facility, and reconfigure their on-site operations in order to utilize freight rail. This could be developed either on their existing property, which based on topography and land ownership would be an expensive undertaking, or along side the existing railroad, which may significantly impact their daily operations. The owner of the business anticipates that they could save on operations costs if rail were available. For example, insurance costs associated with transporting the freight would potentially be less if it was moved by rail rather than truck.

As described previously, there may be opportunities for Tilcon to utilize freight rail service operated along the VRR, but this would depend on market forces and cost competitiveness considerations. This assessment, however, is based on third-party information related to their operations. Tilcon was not available to be interviewed regarding their potential use of the rail corridor.

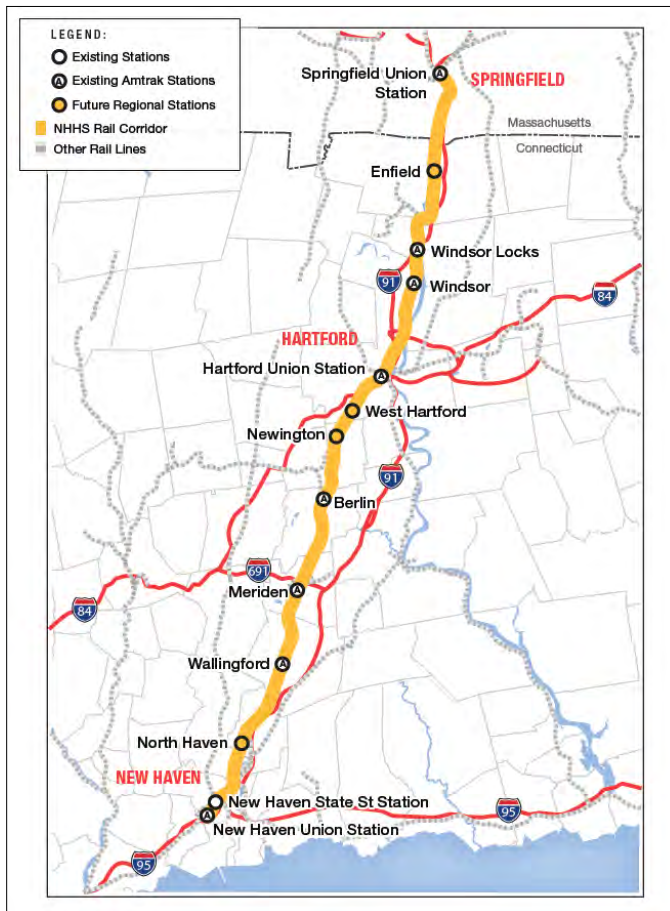
While there is no guarantee that businesses abutting the VRR would use freight rail service if it were available, there are some businesses for whom rail may be an option. Their decision would depend on market forces, as well as the relative cost of truck versus rail transport.

1.5. Impacts of Proposed Passenger Rail Service Improvements

The New Haven-Hartford-Springfield (NHHS) Commuter Rail Project will provide commuter rail service between New Haven and Springfield starting in 2016, with the completion of the first phase. In the full build, the project will include 12 stations and service operating 16 weekday round trips with 30-minute headways during peak hours and 1-2 hour headways during off-peak times. The project will complement the existing Amtrak New Haven-Springfield Shuttle, Vermonter, and Northeast Regional services that currently operate on the corridor. Services will also directly connect to Metro North in New Haven, providing cross-platform transfers to New York City.

As shown in Figure 1.13, the NHHS project is located approximately 15 miles west of the Lower Connecticut Valley Council of Government (LCRVCOG) region, with approximately a 20-30 minute travel time to Berlin, Meriden, Wallingford, or North Haven stations. The project will allow residents of the LCRVCOG communities to access rail service to New Haven and Hartford and most stations provide parking facilities. Residents will also be able to access service to New York City more easily on the NHHS corridor, providing improved access to the associated business, employment, and cultural opportunities.

Figure 1.13 Future NHHS Commuter Rail Service²⁴



Freight rail focused improvements included in the project are limited to construction of three new railroad passing sidings. The sidings would run parallel to the main line tracks and be used to hold freight trains to avoid delays to passenger trains. The sidings would be located as follows:

- Berlin Siding: Mile Post (MP) 26.6-27.8. This siding, which would not be required until 2030 service levels are achieved, would reduce train conflicts south of Hartford for Connecticut Southern Railroad (CSO) trains serving local area shippers.
- Hartford Yard Siding: MP 37.3-38.8. This siding would be located within the existing Hartford Railroad Yard and provide storage for freight trains operating to and from the yard and adjoining branch lines.
- Armory Branch (Springfield) Siding: MP 62.6-62.9. This siding, consisting of either upgrading an existing track or construction of a parallel track, would provide access to the proposed Springfield layover and light maintenance facility.

In analysis of rail operations upon completion of the project, the estimated impacts (both positive and negative) for freight railroad operations will be minor. The capital improvement plan identified above was developed to accommodate anticipated growth in freight rail business. While passenger train speed limits would be increased to a maximum of 110 mph at selected locations, freight train speeds

²⁴ "NHHS Project Map." Connecticut Department of Transportation, <http://www.nhhsrail.com/>, accessed November 4, 2013

will not change. Even with the increased rail service along the line freight train delay is estimated to increase by only 10 minutes per 100 train miles or about 3 minutes per trip.

The combination of the additional sidings and changed operations on the line will result in improved flexibility for the freight rail operators to better meet their customers' needs. However, the changes are not anticipated to be substantive enough to alter freight volumes or operations along the line and are not anticipated to influence demand for service on the VRR.

1.6. Passenger Market Analysis

Commuter rail is a mode of transit that typically connects large central business districts to lower-density suburban regions and systems are publically owned by local or state agencies. Service patterns on commuter railroads tend to provide higher frequencies during morning and evening rush hours with limited or no service during off peak week days or weekends. Examples in Connecticut include Metro North, Shore Line East, and the soon to open New Haven-Hartford-Springfield Commuter Rail Line. Commuter rail systems vary in size and ridership. The Long Island Rail Road is the busiest in the United States, carrying 334,000 riders per day and the Music City Star in Nashville is the least used, operating with approximately 1,000 passengers daily.

1.6.1. Existing Potential Demand for Passenger Rail Service

Measuring the potential efficacy of proposed commuter rail is possible through an Indicator-based method, where characteristics of a particular corridor may help determine the project's success.²⁵ The Indicator method is a simplified method used to analyze the potential for commuter rail in the LCRVCOG region. This method studies key real estate, demographic, and transit habits as a means of determining potential ridership for a commuter rail line.

The total square footage of office space in a downtown is an indicator of potential viability for transit systems. Analyzing the effectiveness of transit systems across the nation and the relative size of downtown office space provides general characteristics for support of transit systems. For example, the report found that local bus service can be supported with 2.5 million square feet of residential space and 4 to 15 units per acre in the corridor that serves the downtown area.²⁶ Only downtowns with the greatest amount of office space, over 70 million square feet, are able to support commuter rail systems.²⁷ Table 1.1 profiles transit modes compared with minimum downtown office space and minimum residential densities along the commuter rail corridor.

²⁵ "Making Effective Fixed Guideway Transit Investments: Indicators of Success." *Transit Research Board*, January 2014, Page 1-6.

²⁶ "Making Effective." Page 1-7.

²⁷ "Making Effective." Page 1-7.



Table 1.1: Transit Mode Suitability Criteria

Transit Vehicle Mode	Minimum Downtown Size, Square Feet of Contiguous Non-Residential Floor Space (millions)	Minimum Residential Density, Dwelling Units per Acre
Local Bus	2.5	4 to 15
Express Bus	7	3 to 15
Light Rail	21	9
Heavy Rail	50	12
Commuter Rail	70	1 to 2

Hartford is the most likely destination of most LCRV Region commuter rail passengers. The City has 10 million square feet of rentable office space according to property research firm CBRE.²⁸ Additionally, the city has government and institutional space that contributes to overall office space totals. However, even assuming government and institutional office space doubles the total office space in Downtown Hartford, the area falls significantly short of the 70 million square feet necessary to support a commuter rail line.

Additionally, an analysis of U.S. Census Bureau’s American Community Survey data (2006-2010 Five Year Estimates) reveals that relatively small numbers of people commute from the communities in the LCRVCOG study area to Hartford. According to the survey results, total Hartford employment for the LCRVCOG communities of Chester, Deep River, Essex, Haddam, and Old Saybrook was approximately 616 people in 2010. Table 1.2 highlights existing commute volumes from each corridor community to other (out of town) employment locations along the potential route.

Table 1.2: Corridor Community Commute Volumes by City and Town

Out of Town Employment Locations	Chester Residents	Deep River Resident	Essex Residents	Haddam Residents	Old Saybrook Residents
Chester	N/A	311	76	177	28
Deep River	108	N/A	122	82	90
Essex	156	401	N/A	95	253
Haddam	0	27	0	N/A	40
Old Saybrook	90	238	502	23	N/A
Cromwell	26	13	33	122	11
Hartford	104	78	112	214	108
Middletown	279	114	69	843	213
Rocky Hill	0	19	25	90	36
Wethersfield	0	0	0	98	0
Total Corridor Employment	763	1,201	939	1,744	779

According to the U.S. Census, slightly less than five percent of Hartford area commuters use transit to commute to work.²⁹ Assuming a typical mode share distribution to the rest of the Hartford region, approximately 31 people would be expected to use a new commuter rail line from the LCRVCOG communities into Hartford on a regular work day. Even if transit usage were double the regional average, only 60-70 riders would be expected to use the train on an average weekday.

Therefore, the viability of a commuter rail line from the LCRVCOG region to Hartford would be seriously undermined by the likely low ridership. The low ridership stems from the size of the Hartford office market, existing commuters from the LCVCOG region to Hartford, and existing mode share in the Hartford region.

²⁸ “Hartford Office Market View Q2 2013.” CBRE. Page 3, <http://www.cbre.us/o/hartford/Pages/market-reports.aspx>

²⁹ U.S. Census Bureau. “Commuting in the United States: 2009.” Page 8, <http://www.census.gov/prod/2011pubs/acs-15.pdf>

1.6.2. Future Potential Demand for Passenger Rail Service

To provide an example of the level of ridership necessary to support a commuter rail service, an example service was identified in which the local community has provided the subsidy needed to support the service. Minneapolis, Minnesota was identified as a relevant example to consider. Minneapolis has a commuter rail network that serves its downtown, which has 28 million square feet of commercial office space,³⁰ about 2.5 times the amount of office space that Hartford has. Downtown Minneapolis is served by the Northstar Commuter Rail Line, a service extending from Target Field in downtown to Big Lake, a northern suburb, with five intermediate station stops. The service operates over 40 miles and parallels a busy Interstate highway (I-94) for much of its length. The service averages 2,400 riders per day and operates at least hourly service during daytime hours.³¹

Not only does Minneapolis have a large downtown office market, but it also has two professional sports teams, numerous theaters and cultural attractions, and is in close proximity to Downtown St. Paul, which also attracts riders. However, the Northstar Line only manages to attract 2,400 riders per day. While the comparison to Hartford is not perfect, a commuter rail line in Hartford with similar frequencies and service characteristics would likely attract significantly less than 1,000 riders per day given today's conditions. Dramatic changes would need to occur within the economics of commuting, such as significant gas prices or parking rate increases or, changes in the densities in corridor communities, or linkages made on the New Haven-Hartford-Springfield line, for commuter service to be sustainable along the Valley Railroad Line.

1.7. Analysis of Joint Use of the Rail Line

In 1969, the State of Connecticut acquired the Valley Railroad Line through the abandonment process from the New York, New Haven, and Hartford Railroad. The Connecticut Department of Energy and Environmental Protection (CTDEEP) manages the 22-mile long line running from Old Saybrook to a location south of Middletown as the Valley Railroad State Park. The CTDEEP leases to the line to the Valley Railroad Company, which operates the Essex Steam Train, a major tourist destination in Connecticut.

The Essex Steam Train has operated for over 40 years along the corridor. The train currently runs between Old Saybrook and Haddam. The service operates generally from May through December with up to five round-trips per day. The trains operate between three and seven days a week and provide rides to over 150,000 passengers per year. In addition to the typical service, the Essex Steam Train also offers special events trains, which can operate up to 40 round trips per day.

1.7.1. Existing Railroad Property Leases and Legal Requirements

Acquisition of the Line

As previously noted, the State of Connecticut purchased the Valley Railroad line in 1969. This purchase was made with support from the U.S. Department of Interior's Land and Water Conservation Fund Grant (LWCF). LWCF support of the property acquisition was made with the intent of using the line as a scenic

³⁰ "Minneapolis-St. Paul Office Market Report, Q2 2013" *Colliers International, CBRE*. Page 6, <http://www.colliers.com/~media/5eb47546525b490c868c7fab98a03230.ashx>

³¹ "Transit Ridership Report, First Quarter 2014." *American Public Transit Administration*, <http://www.apta.com/resources/statistics/Documents/Ridership/2014-q1-ridership-APTA.pdf>

railway as stated in the LWCF Grant “If it is deemed possible, the abandoned rail line [the Valley Railroad] will be converted into a scenic railway”.³²

The LWCF State Assistance Program was established by the LWCF Act of 1965 to stimulate a nationwide action program to assist in preserving, developing, and assuring to all citizens of the United States of present and future generations such quality and quantity of outdoor recreation resources as may be available and are necessary and desirable for individual active participation. The program provides 50 percent matching grants for the acquisition and development of public outdoor recreation sites and facilities.

Section 6(f) of the LWCF Act requires all funded lands to be retained and used solely for outdoor recreation in perpetuity. In the case of the Valley Railroad, scenic railroad operations was identified as a form of outdoor recreation at the time of acquisition and was identified as the primary use to serve the recreating public. As noted in recently shared communications with the National Park Service (NPS), an NPS official was noted “*When this particular LWCF project was approved, it included a unique outdoor recreation feature that pertained to a train excursion for park and recreation users located in close proximity to the Connecticut River. This project also allowed limited light freight use during off peak hours when the train excursions were not in use.*”

As noted above, the primary purpose of federal support was for scenic rail operations, and therefore, exclusive freight or passenger rail operations (without allowing for scenic rail operations to continue) would constitute a conversion of the property. The situation that is less clear, is whether other outdoor recreation uses of the corridor (such as a bike trail) that would not permit the scenic rail operations to continue would be considered a conversion by the National Park Service (NPS).

Any conversion of LWCF supported lands must be approved by the NPS. The NPS will only consider approval if all alternatives to the conversion have been evaluated and rejected on a sound basis. If approved, the grant recipient must acquire replacement lands of at least equal fair market value and recreational usefulness.

Furthermore, NPS approval must be obtained prior to any change from one eligible use to another when the proposed use would significantly contravene the original plans or intent for the area as described in the original LWCF project(s). This means that any use of the line that would preclude scenic rail operations would need to be approved by the NPS to confirm that the conversion was being made with the original intent of the acquisition.

As noted in the original grant, although the grant intent for the 300 acres that make up the Valley Railroad was for the operation of scenic rail services, the possibility of that service was questionable at the time. This clouds the interpretation of the original intent of the federal assistance and would certainly come into play if a conversion assessment was ever required. The US Department of Interior provides as an example that even in a case where a swimming pool surrounded by substantially developed recreational uses (i.e. playgrounds, sport courts) is modified to a less intense area of limited development (such as a passive park) that NPS approval would be required and may, depending on the details, be considered a conversion.

In the case of the Valley Railroad property, it has been noted by the NPS that that by itself, use of the railroad for both scenic railway and freight rail services would not constitute a conversion. However, certain other attributes of rail use may come into play regarding limited freight use and any determination

³² *Notification of Land and Water Conservation Fund Grant, United States Department of Interior, April 26, 1968.*

of conversion made by NPS related to freight rail use. These include particular attributes of the contemplated freight services and related operations that cannot be made at this time, such as

- public access limitations to the property,
- the level of freight rail service planned,
- the viability of continued scenic rail services from the introduction of freight rail operations

US DOT Surface Transportation Board Approval

Prior to initiating freight rail service or interchanging freight, the Valley Railroad would be required to obtain common carrier status from the Surface Transportation Board (STB). It is through this STB approval process that the parameters of the freight service and its relationship to other uses of the line would be further evaluated. Depending on the level of service anticipated an environmental review under the National Environmental Policy Act (NEPA) may be required. Under the Surface Transportation Board's environmental rules, requests for new operational authority on a rail line typically are excluded from NEPA review unless they trigger certain thresholds (generally an increase of 3 or 8 trains per day depending on whether the area is in attainment under the Clean Air Act). The details of the contemplated freight rail service, any potential limitations that could be placed on that service and the related impacts from the service that are evaluated and discussed through that process would certainly impact the NPS determination of conversion. If it is determined that a conversion would take place with the introduction of freight rail service, it is estimated that the value of the replacement property would be approximately \$12 to \$15 million, the value of similarly sized rail corridor recently purchases in New England.

Valley Railroad Company Lease

The Valley Railroad Company has held a lease from the State of Connecticut for the railroad property since 1970. The lease has gone through several amendments over time, the latest lease amendment being executed last year. Under the terms of the lease, the Valley Railroad Company holds the passenger and freight rail operating rights to the property on renewable terms that could run through 2077. The Valley Railroad Company's responsibilities include maintenance of the property (consistent with Federal Railroad Administration [FRA] regulations and American Railway Engineering and Maintenance-of-Way Association [AREMA] standards), and providing a minimum level of scenic rail services to be approved annually by the Director of the State Parks Division.

Additionally, the Valley Railroad Company is responsible for providing or facilitating the operation of freight rail service along the line, to operate in concert with the scenic rail services at the request of the State. The state also reserves the right to assign "overhead" trackage rights to a freight railroad. Overhead trackage rights allow a railroad company to travel along a rail line, without stopping to serve any customers along the line. As noted in the lease, prior to the initiating freight service along the line, either by directly operating service or assigning overhead trackage rights, the Valley Railroad Company would be required to obtain common carrier status from the U.S. Department of Transportation's Surface Transportation Board (STB).

In addition to the rights that the Valley Railroad Company holds on the segment of the line between Old Saybrook and Maromas, they also hold passenger rights to the line from Maromas to Hartford. These rights would allow potential expansion of scenic rail operations being discussed along that portion of the line, most notably in Middletown.

1.7.2. Requirements for Joint Use of Rail Line

The FRA has regulatory authority over “every area of railroad safety.” The term “railroad” in the United States federal code is defined as “any form of non-highway ground transportation that runs on rails or electromagnetic guideways.”³³ While the definition goes on to exclude rapid transit systems, all other types of rail system, regardless to their connection to the national railroad network, are included. This means that the FRA has regulatory control over scenic train operations. In many cases, the FRA does not exercise the same level of regulation over tracks or services where freight or commuter rail is not also in operation. This mixing of freight and/or passenger service and scenic rail service would be identified as joint use of the line.

Federal Requirements for Tourist Train Operations

For resource and policy reasons, FRA does not extend the reach of most of its regulations as far as the statute permits. FRA determines the level of regulatory control depending upon the following questions:

- Are the railroad tracks a standard gage?
- Is there a public highway-rail crossing that is in use?
- Is there an at-grade rail crossing that is in use?
- Is there a bridge along the line that crosses over a public road or waters used for commercial navigation?
- Is the track within 30 feet of any other railroad in operation?

Since the Valley Railroad crosses public highways and has a physical connection to another railroad on the northern and southern end, the FRA considers the VRR a “non-insular” railroad. On non-insular tourist railroads, FRA exercises its regulatory powers in the following areas:

- Federal signal inspection laws,
- Hazardous materials regulations,
- Noise emission regulations,
- Freight car safety standards,
- Bridge safety standards
- Accident/incident reports regulations,
- Hours of service restrictions on duty hours,
- Steam locomotive inspection regulations,
- Grade crossing signal system safety regulations,
- Rail safety statutes enforcement provisions, and
- Emergency order authority.

Of note in the list above are items that are specific to freight operations even in the regulation of tourist train operators. VRR is relatively unique in that the tourist service does not either operate along an existing freight rail line, or operate some freight service in order to support the tourist operations.

Additional Federal Requirements for Freight Train Operations

If freight operations were initiated over the rail line, the Valley Railroad Company would be required to comply with an additional set of FRA regulations. A summary of these additional regulations is listed below.

³³ 49 U.S.C. § 20102(2)(A)

- Railroad Police Officers
- Railroad Safety Enforcement Procedures
- Track Safety Standards
- Railroad Workplace Safety
- Railroad Operating Rules
- Railroad Operating Practices
- Control Of Alcohol And Drug Use
- Railroad Communications
- Rear End Marking Device—Passenger, Commuter And Freight Trains
- Safety Glazing Standards—Locomotives, Passenger Cars And Cabooses
- Occupational Noise Exposure
- Railroad Locomotive Safety Standards
- Railroad Safety Appliance Standards
- Brake System Safety Standards For Freight And Other Non-Passenger Trains And Equipment; End-Of-Train Devices
- Signal Systems Reporting Requirements
- Rules, Standards, And Instructions Governing The Installation, Inspection, Maintenance, And Repair Of Signal And Train Control Systems, Devices, And Appliances
- Qualification And Certification Of Locomotive Engineers
- Qualification And Certification Of Conductors

It should be noted that many of the safety standards, such as the track safety standards, are being currently followed by the Valley Railroad as both good business practice and as required as part of their lease. Other FRA regulations would represent a significant administrative change to the way that they currently operate and would need to be factored in to costs of freight operations along the line. It is estimated that the additional FRA regulatory requirements and management structure changes needed to oversee the freight operations would increase costs to the railroad by about \$400,000 per year.

In addition to the FRA regulatory requirements, the introduction of freight service by Valley Railroad Company would require establishing the railroad as a common carrier (as noted in their lease). This change in railroad status would require railroad employees, and possibly volunteers, to be managed under the railroad retirement system, which would certainly change the labor structure of Valley Railroad Company.

Attributes of the rail line may also change with the introduction of freight operations. The following attributes have been identified as concerns:

1. Installation of fencing – fencing is not required for freight rail operations, rail lines are typically only fenced in urban locations and where trespassing is an on-going safety and liability concern. Although fencing of the right-of-way may be a preferable condition in some area to enhance safety, it would certainly be a topic in the NPS conversion analysis.
2. Construction of signal systems – presently use of the line by freight service would not, by itself, require the installation of a signal system and the related signal “bungalows”. Many low-density lines operate without a signal system in place. As FRA signal requirements for jointly operated lines has been evolving over the years, the need, or lack thereof, for a signal system may change.
3. No Trespassing Signs - Freight or passenger railroads are not required to post no-trespassing signage, however trains (whether they are scenic trains or freight trains) and pedestrians are not generally compatible uses along a corridor. HDR would anticipate that reasonable efforts are

already undertaken by Valley Railroad to minimize trespassing on the currently operational section (whether that is signage or enforcement) and would anticipate the same approach would be used for the extension of railroad use along the currently underutilized segment. However, utilization of the Valley Railroad right-of-way for uses other than the scenic rail service and enforcement of trespassing or encroachments are ultimately an issue to be addressed by the property owner (CTDEEP) and their lessee (Valley Railroad) regardless

4. Highway-Railroad Automatic Warning Devices - The scope of what, if any, automatic warning devices to be installed at a public at-grade crossing is typically developed through a diagnostic team review approach that includes representatives of the railroad, the state, the local roadway officials, and local emergency responders. The diagnostic team would take into account amount of traffic, sight lines, highway speeds and volumes to determine the most appropriate warning systems, which for low-density low-speed lines typically range from signs to two-quadrant gates. The noise and visual impacts of these two-quadrant crossing gate systems can be seen at existing locations along the line. Installation of warning equipment at private crossings is typically worked out through discussions with the railroad and the crossing owner.
5. Railroad Operating Practices – In general, freight railroads are not required to comply with many state and local regulations. The general principal arising from the statutory and case law is that, if a freight railroad is engaged in transportation-related activities, federal law will preempt state and local attempts to regulate that activity. Much of this comes through the Interstate Commerce Commission Termination Act of 1995, which preempts state and local regulation, i.e., “those state laws that may reasonably be said to have the effect of ‘managing’ or ‘governing’ rail transportation.”³⁴ Although most freight railroads are good corporate citizens, there are cases when local concerns conflict with the regional, state, or international needs of the railroad’s ability to move freight and therefore the railroad’s operational needs are allowed to come first. Recent local-level community concerns regarding railroad operations known to HDR have included: inability to limit movement of hazardous material, railroad pre-emption of preconstruction permitting, demolition permitting, and environmental permitting, inability to control operations (i.e. time and duration of operations), inability to control nuisance issues (i.e. unsightly railcars on corridor, storage of railroad material).

³⁴ *Norfolk Southern Railway Company v. City of Alexandria*, 608 F.3d 150, 157-158 (4th Cir. 2010)

Appendix B. Rail Line Engineering Analysis

As part of determining the future best use of the VRR right-of-way, HDR conducted an analysis of existing conditions along the VRR with the goal of providing an order-of-magnitude cost estimate for rehabilitation and restoration of the line to FRA Class 2 freight service. The corridor is owned by the Connecticut Department of Energy and Environmental Protection (CTDEEP) and is operated and maintained by the Valley Railroad Company. The CTDEEP-owned portion of right of way connects the Pratt and Whitney Manufacturing Facility in Middletown, Connecticut with Amtrak's Northeast Corridor in Old Saybrook, Connecticut. The remaining 5.5 miles from the Pratt and Whitney Manufacturing Facility to Middletown Center is owned by the State of Connecticut with freight operating rights held by the Providence and Worcester Railroad (PWRR) and passenger rights held by Valley Railroad. An engineering analysis of the PWRR section was not included as part of this study and it should be noted that significant work would be necessary to restore the remaining 5.5 miles of track into a state of good repair. Also of note is that the cost estimates provided in this chapter includes the cost to restore the one mile segment from mile post 21.7 to 22.7. Although the CTDEEP-owned portion of the line ends at MP 21.7, Valley Railroad has maintained operational control to MP 22.7 since Pratt and Whitney stopped receiving freight rail service.

2.1. Existing Track Conditions

HDR reviewed New York, New Haven, and Hartford Railroad Valuation Maps dated June 30, 1915 to determine the physical characteristics of the VRR operated line. Additionally, maintenance history and practices were identified by an interview with Mr. Rob Bradway, Vice President of Track and Property for the Valley Railroad Company. This information was used to assess a general quantity and condition of the Valley Railroad Line. Conditions were verified during a hi-rail inspection taken with Mr. Bradway on November 14, 2014. Locations were photographed to document existing conditions of major assets such as, bridges, turnouts, and road crossings. Additionally, obstructions and other items that would require additional analysis were photographed. Tie conditions were observed from the hi-rail truck and, when conditions significantly changed, an on-foot inspection was conducted to determine the number of ties that need to be included in upgrade projects.

2.1.1. Corridor Segments

Based on the interview, field inspection, and analysis of the maintenance practices of the Valley Railroad, the corridor has been broken up into four sections. Each section will have slightly different requirements to support freight operations at FRA Class 2 speeds. The four segments considered, including the Mile Post's (MP) used to describe the segments, are defined in Table 2.1.

Table 2.3: Valley Railroad Corridor Segments

Segment	Starting Mile Post (MP)	Ending Mile Post (MP)	Total Miles	Current Maintenance Level
1	0.0	4.0	4.0	FRA Class 1
2	4.0	12.3	8.3	FRA Class 2
3	12.3	12.9	0.6	Undergoing work to meet FRA Class 1 standards.
4	12.9	21.7	8.8	Active preservation for future use.

Regularly Operated Segments

A total of 12.3 miles is maintained to support some level of scenic train operations. Four miles are maintained to FRA Class 1 Standards, while 8.3 miles are maintained to FRA Class 2 Standards. As such, tie conditions, drainage, and ballast are generally adequate to support safe train operations. The Valley Railroad Company is currently upgrading approximately 0.6 miles to support scenic train operations. Such work includes joint bar replacement, bolt maintenance, installation of five ties per rail, and other work to ensure compliance with FRA Class 1 Standards. The following pages include photographs of the current conditions along these two segments of the corridor.



Looking North along the Line (north of MP 4)



Looking North along the Line (north of MP 6)



Bridge over the Deep River (MP 8.15)



Looking North along the Line (north of MP 9)

Maintained Segments

Work on approximately 0.6 miles of track is currently underway to restore that section to FRA Class 1 conditions. This work primarily includes the replacement of ties in the segment between MP 12.3 and 12.9. The remaining 8.8 miles is being preserved in a manner that would expedite future use. As such, this segment experiences brush cutting and minimal drainage work from volunteers to prevent the corridor from reforesting and to prevent erosion that would damage the roadbed. This area contains several discontinuities caused by washouts, encroachment, and emergency bridge repairs. More engineering design will be required in this segment to upgrade it for freight use.

The entire corridor undergoes a vegetation management program. This is done to prevent vegetation from reclaiming the right of way and to minimize more expensive mechanical vegetation removal. The following pages include photographs of the current conditions along this segment of the corridor.



Looking North along corridor where track is being restored to FRA Class 1 (MP 12.9)



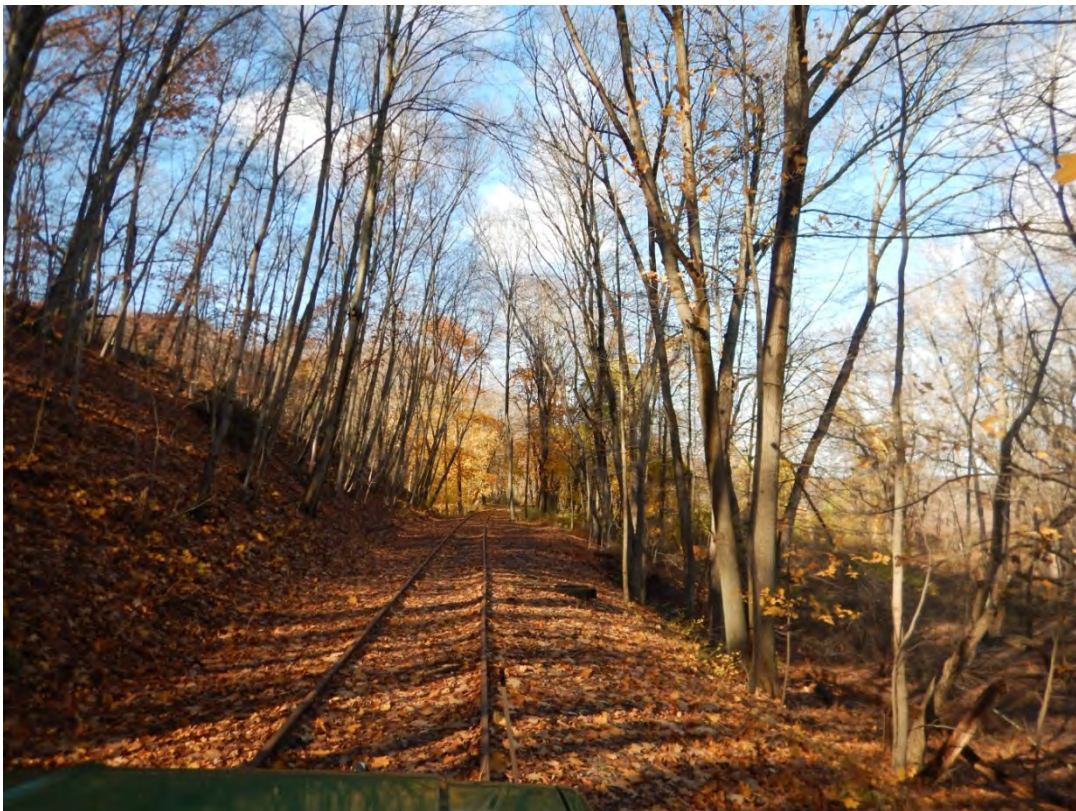
Valley Railroad Line at Midway Marina (MP 13.3)



Driveway embankment constructed across line (MP 14.4)



Mill River Bridge (MP 14.74)



Looking North along Corridor (north of MP 16)



Looking North along Corridor (north of MP 17)



Washout along the line (MP 17.67)



Higganum Cove Bridge (MP 18.48)

2.2. Railroad Rehabilitation Improvements

2.2.1. Assumptions

In the development of rehabilitation requirements and costs, two operating scenarios were considered. Scenario #1 includes requirements for upgrading the line for freight operations with continued tourist train operations. Scenario #2 includes requirements for upgrades for tourist train operations along the whole corridor with no freight operations.

For Scenario #1, it is assumed that the required upgrades to the track and bridge infrastructure would be sufficient to support a 286,000 pound freight car, which is an industry standard in the movement of railroad freight. In addition, current AREMA standards would be followed to support the heavier axle loading cycles caused by the increased frequency of freight traffic. Items like ties, rail, ballast, and “other track material” (OTM) will be sourced in larger quantities than what is currently purchased by the Valley Railroad Company. To reduce operations and maintenance costs, higher-grade materials than what are currently used by the Valley Railroad Company will be required.

For planning purposes, it was assumed that the VRR would experience two freight movements per weekday, consisting of one loaded 80 car aggregate train plus one empty 80 car aggregate train. This would total approximately 3.4 million gross tons (MGT) of freight traffic per year. A total of five

million MGT would be a conservative estimate, which would take into account scenic train operations and miscellaneous freight traffic.

Track upgrades would be done in a manner that will meet or exceed FRA Class 2 standards to take full advantage of large scale efficiencies, the completed work product will require more tie installation work than what would be required to meet the minimum requirements. The higher cost associated with total reconstruction is typically justified by the increased useful operating life of the infrastructure. In addition the higher quantities of material to be installed result in a lower unit cost associated with a mechanized installation processes.

For Scenario #1, it is assumed that the required upgrades to the track and bridge infrastructure would be sufficient to support 20 kip wheel loads, an industry standard. In addition, current Valley Railroad Company maintenance practices would need to be carried out on the entire segment. Work required would entail installation of ties, replacement of defective joint bars, and tightening of bolts along the line.

2.2.2. Scenario #1 (Freight Rail and Tourist Rail)

Segments 1, 2, and 3 (MP 0 to 12.9)

Due to the ongoing efforts by the Valley Railroad Company, the work scope for upgrades to operating segments is mostly limited to infrastructure improvements to meet current industry standards for freight operations. This line consists of smaller rail sections, including 78NH, 107NH, 74NH, and 80ARA-A rail sections. These smaller rail sections are not adequate for the increased tonnage and related stress that freight traffic would bring. Additionally, jointed rail sections would require a higher level of maintenance due to the increased tonnage. In order for the Valley Railroad Company to maintain the increased quantity of infrastructure with the same staffing levels, more modern track components are required, as they will require a lower level of maintenance and operating expense over time. The following cost estimate for this section assumes total replacement of the mixture of smaller rail sections with 115RE continuous welded rail. This rail section is a typical standard rail size for any modern improvements related to any freight service. The larger rail section will require the replacement of rail through road crossings and the upgrading of switches. The cost estimate provided in Table 2.2 assumes a lower quantity of ties to be installed due to the good tie replacement practices carried out by the Valley Railroad Company.



Table 2.4: Scenario #1 Segments 1-3 (MP 0-12.9) Cost Estimate

Project Task	Quantity	Unit	Unit Cost	Total Cost
Install New Turnouts	10	Each	\$100,000.00	\$1,000,000
RR Crossing Surface	22	Each	\$100,000.00	\$2,200,000
Furnish Ties	10,380	Each	\$65.00	\$674,700
Install Ties	10,380	Each	\$35.00	\$363,300
Furnish Rail and OTM	136,224	Linear Foot	\$33.33	\$4,540,346
Install Rail	136,224	Linear Foot	\$26.00	\$3,541,824
Furnish Ballast	7,980	Ton	\$25.00	\$199,500
Install Ballast	7,980	Ton	\$15.00	\$119,700
Surfacing	13	Pass Mile	\$5,280.00	\$68,112
Engineering & Management	N/A	N/A	10%	\$1,270,748
Contingency	N/A	N/A	10%	\$1,270,748
Cost for Improvements from MP 0 to 12.9				\$15,248,978

Segment 4 (MP 12.9 to 21.7)

Efforts made by the Valley Railroad Company to preserve this corridor for future use has minimized the need to reclaim portions of the right of way prior to restoring track infrastructure. Three discontinuities currently exist along this segment of the corridor:

- a portion of track has been covered inside a boatyard at MP 13.3;
- a cut section at MP 14.41 has been filled in to preserve access to a property that was formerly accessible by an overhead bridge; and
- a washout has occurred at MP 17.67.

Washouts have been prevented by the efforts of the Valley Railroad Company to ensure drainage ways are clear. Major work scope through this location includes replacement of existing rail with 115RE continuous welded rail, tie renewal, and bridge work.

Three bridge structures will require replacement of bridge timber and undergo repairs to their abutments and superstructure. Two of these structures are steel deck girder structures and are located near MP 14.74 and MP 18.21. A three-span structure containing a through plate girder bridge and two deck plate girder approach spans, totaling 149 feet in length, has experienced section loss along the bottom flange angle connections. There was some noticeable rivet head loss. Structural steel repairs are required to ensure this bridge will rate for 286,000 pound rail car traffic.

Three bridge structures will require complete replacement. One timber trestle located near MP 15.69, spanning a floodway approximately 20 feet requires replacement. The area where the washout occurred would require the installation of a 12-foot box culvert. The one span deck plate girder bridge located near MP 19.75 requires significant work to the masonry abutments. Renewal of the abutments may require replacement of the superstructure due to the shortened overall span. Table 2.3 outlines the likely costs associated with upgrading this segment.

Table 2.5: Scenario #1 Segments 4 (MP 12.9-21.7) Cost Estimate

Project Task	Quantity	Unit	Unit Cost	Total Cost
Install New Turnouts	1	Each	\$100,000.00	\$100,000
Bridge Rehabilitation	244	Track Foot	\$4,000.00	\$976,000
RR Crossing Surface	7	Each	\$100,000.00	\$700,000
Bridge Replacement	62	Track Foot	\$12,000.00	\$744,000
Bridge Redecking	244	Track Foot	\$1,000.00	\$244,000
Furnish Ties	15,680	Each	\$65.00	\$1,019,200
Install Ties	15,680	Each	\$35.00	\$548,800
Furnish Rail and OTM	103,488	Linear Foot	\$33.33	\$3,449,255
Install Rail	103,488	Linear Foot	\$26.00	\$2,690,688
Furnish Ballast	9,800	Ton	\$25.00	\$245,000
Install Ballast	9,800	Ton	\$15.00	\$147,000
Surfacing	20	Pass Mile	\$5,280.00	\$103,488
Replace Overhead Bridge	1,608	Square Ft.	\$366.00	\$588,528
Engineering & Management	N/A	N/A	10%	\$1,155,596
Contingency	N/A	N/A	10%	\$1,155,596
Cost for Improvements from MP 12.9 to 21.7				\$13,867,151

Capital Cost Summary

In summary, a significant capital investment in the fourth segment (MP 12.9 to 21.7) would be required. The largest driver is the requirement for bridge repairs. This work will need to be completed for any rail service to occur along the line regardless of the volume or type. In addition to the bridge work, in order for freight rail traffic to operate in a safe and operationally sustainable manner, total replacement of rail is required. Upgrading rail requires all mainline switches and at-grade road crossings connecting to the new rail section to be replaced, thereby increasing the total cost of the work.

The total estimated capital cost for upgrade all sections of the line to facilitate freight rail operations would be approximately \$30 million. The total costs are shown in Table 2.4.

Table 2.6: Scenario #1 Cost Estimate

Component	Cost
Structural (Bridge) Cost	\$2.5 million
Track Costs	\$22.0 million
Engineering & Construction Maintenance Costs	\$2.5 million
Contingency	\$3.0 million
Total	\$30.0 million

2.2.3. Scenario #2 (Tourist Rail Extension)

Segment 4 (MP 12.9 to 22.7)

Due to the lower demand placed on the track infrastructure in this scenario, the quantity and scope of work has been reduced. Efforts would be concentrated in the MP 12.9 to 22.7 segment of the



corridor. A tie replacement rate of 1,280 ties per mile is assumed because of the generally poor tie condition. This quantity will put the corridor in a FRA Class 3 tie compliance level. This was done to take advantage of a quantity that would take the most advantage of employing a mechanized tie replacement team. Table 2.5 outlines the likely costs associated with upgrading this segment.

Table 2.7: Scenario #2 Segments 4 (MP 12.9-21.7) Cost Estimate

Project Task	Quantity	Unit	Unit Cost	Total Cost
Bridge Rehabilitation	244	Track Foot	\$4,000.00	\$976,000
RR Crossing Surface	2	Each	\$100,000.00	\$200,000
Bridge Replacement	62	Track Foot	\$12,000.00	\$744,000
Bridge Redecking	244	Track Foot	\$1,000.00	\$244,000
Furnish Ties	12,544	Each	\$65.00	\$815,360
Install Ties	12,544	Each	\$35.00	\$439,040
Joint Maintenance	3,136	Pair	\$6.50	\$20,384
Furnish Ballast	7,840	Ton	\$25.00	\$196,000
Install Ballast	7,840	Ton	\$15.00	\$117,600
Surfacing	9.8	Pass Mile	\$5,280.00	\$51,744
Replace Overhead Bridge	1,608	Square Ft.	\$366.00	\$588,528
Engineering & Management	N/A	N/A	10%	\$439,266
Contingency	N/A	N/A	10%	\$439,266
Cost for Improvements from MP 12.9 to 21.7				\$5,271,187

Major drivers to the total cost include, tie installation costs and bridge repairs. It is unknown if the \$588,528 bridge replacement cost can be recovered from the grantee of easement to cross the right of way.

Capital Cost Summary

Scenic train operations require less scope of work over a smaller area than required for freight service. Since limited new capital work is needed along the currently operated corridor to maintain tourist train operations and the tourist train puts more limited loads and stresses on the facilities, the cost to extend tourist train operations is significantly less. As shown in Table 2.6, the total estimated capital cost for upgrade all sections of the line to for extended tourist train operations would be approximately \$5.3 million.

Table 2.8: Scenario #2 Cost Estimate

Component	Cost
Structural (Bridge) Cost	\$2.5 million
Track Costs	\$1.8 million
Engineering & Construction Maintenance Costs	\$0.5 million
Contingency	\$0.5 million
Total	\$5.3 million

2.2.4. Passenger Rail

Improvements to the track structure and right-of-way to facilitate implementation of passenger rail service would not vary dramatically from the freight rail service driven improvements identified above in Scenario #1. The primary infrastructure improvements related to bridge rehabilitation, rail replacement, and tie and track structure improvements would be the same for regularly operated passenger rail service as they

would for freight service. Although the freight rail service improvements are primarily due to the heavier loads placed on the track, regularly operated passenger rail service, which operate at higher speeds, requires the same improvements for both safety and ride quality considerations.

In addition to the track and right-of-way modifications, other capital improvements would be necessary to implement passenger rail service along the corridor. This would include the following:

- A train layover/maintenance yard,
- Fully accessible train-platforms, and
- A train signal system, with positive train control.

The costs of the additional equipment required to operate passenger rail service would likely double or triple the total cost of the projected improvements depending upon specific site conditions for each of the needed improvements.

2.3. Environmental Conditions and Constraints

2.3.1. Review of Issues Related to Potential Track Improvements

The conditions along the VRR Line in relation to environmental constraints and conditions are typical for railroad corridors in New England. The alignment of the VRR Line is immediately adjacent to wetlands and floodplains though much of the corridor. Due to the grade limitation of railroads, it was common practice in the early day of rail line construction to build them where the flattest ground could be found, and in New England that was most often along the riverbank.

Although the rail line is, in some cases, immediately adjacent to the Connecticut River or other environmentally sensitive areas, the improvements necessary to upgrade the line for freight service or extended operation of tourist rail service is not limited due to these conditions. All improvements would be conducted on or within the existing railroad embankment; this would include replacement of ties, rail, and some bridge structures and therefore would not be constrained by proximity to the natural conditions. It is assumed that the work would be designed and conducted in compliance with industry standards, which would mean compliance with AREMA standards. These standards, which are continually updated, are based on the collective experience of railroaders and their century long experience in building railroads. As previously noted, restoration of the railroad to freight rail service would likely require an environmental review under the National Environmental Policy Act (NEPA). It is through this process that any impacts related to track construction, such as stormwater, floodplain or wetlands would be identified, assessed and mitigation strategies identified.

As noted from the field investigation, there is one location along the corridor where a washout has occurred. In the restoration of the track through this segment, careful consideration would be required to restore the embankment that did not result in impacts to adjacent areas or would result in continued erosion and washout issues in this location. Restoration of the embankment in that area would likely require reinforcement of the embankment through the placement of additional stone.

2.3.2. Risk to Environmental Conditions Related to Ongoing Operations

Inherent in the movement of goods and people, there is risk of an accident that could lead to bodily, property, or environmental harm. In light of this ongoing risk, it is important to consider risk in relation to other options and alternatives for the required transportation. In the following section, the environmental risk as it relates to the restoration of freight rail along the VRR Line is considered.

Railroad System Safety

Since the Staggers Act was passed in 1980, which deregulated the railroads, a tremendous change has occurred in the industry. Railroads have consolidated, merged, and been abandoned, which have all led to today's railroad network. During this period of change, the deregulation process led to an increase in competition, which prompted the railroads to implement changes in efficiency and to change business practices in order to limit their liability. These changes have made freight rail transportation more efficient and safer than ever.

The push to increase efficiency and safety means that railroads have developed an operating environment that is safer and has less risk of accident than what was historically the case. Furthermore, stricter environmental regulations mean that the oil and chemical spills that were frequent on the railroad in the past are now rare events. Railroad tank cars are engineered to much higher standards than they were in the past and are usually not ruptured in derailments.

The rail industry as a whole has increased safety provisions including investments in infrastructure and equipment, which have reduced train accidents rates. Many railroads have turned to new technologies to increase safety, such as installing detectors along the tracks to identify defects in passing railcars, ground-penetrating radar to detect subsurface conditions that could compromise the track, and detectors to identify defects in the track itself or rail wheels traveling down the tracks. The Association of American Railroads reports a decline of over 42 percent in the train accident rate since 2000.

Over the past decade, Connecticut experienced approximately 1.75 reportable rail train accidents annually. None of these resulted in any deaths or injuries. The majority of freight train accidents and consistent with national incident trends many of them were derailments and caused by broken rails.

On average there are just over 22 hazardous material release incidents in the state each year related to freight train accidents. These releases involve on average 745 cars, which derailed that were carrying hazardous material and 53 cars that actually caused the releases. These releases are typically minor in nature and rarely result in damages exceeding \$100,000 and none over \$500,000.

Table 2.7: Connecticut Railroad System Freight Train Accident History

Category	2006	2007	2008	2009	2010	2011	2012	2013	2014
FREIGHT TRAIN ACCIDENTS	3	1	1	1	4	.	1	2	1
--- Train accident deaths	.	.	.	.	.	.	.	.	.
--- Train accident injuries	.	.	.	.	.	.	.	.	.
--- Human factor caused	1	.	.	.	.	.	.	.	.
--- Track caused	1	1	.	.	3	.	1	1	.
--- Motive power/equipment caused	1	.	.	.	.	.	.	1	.
--- Miscellaneous caused	.	.	1	1	1	.	.	.	1
--- Derailments	3	1	1	1	4	.	1	2	1
--- Train accidents on main line	2	.	1	1	3	.	1	2	.
--- Accidents on yard track	.	1	.	.	1	.	.	.	.
Accidents with reportable damage over \$100K	1	.	.	.	1	.	.	2	.
Accidents with reportable damage over \$500K	.	.	.	.	.	.	.	.	.
Accidents with reportable damage over \$1M	.	.	.	.	.	.	.	.	.

HAZMAT RELEASES	30	46	21	22	21	21	26	18	15
Cars carrying hazmat	8,990	8,562	8,430	6,413	7,553	7,581	6,876	7,192	7,509
Hazmat cars damaged/derailed	1,041	1,056	750	743	708	665	671	822	785
Cars releasing	71	76	37	44	40	66	50	78	26

Source: Federal Railroad Administration, Office of Safety

The overview of freight rail accident provides several insights into environmental risk. First, freight train operations are not without risk, there are generally a few accidents each year in Connecticut, and a few incidents that result in a release of hazardous material. Second, the majority of these accidents do not cause injury or significant damages. Third, this typical experience does not identify the potential for greater impact. Although Connecticut has had a decade free of significant freight rail accidents, it does not mean that the risk of a future accident is absent.

To generalize using the above severe accidents as a guide, direct human consequences from a significant accident on the rail freight system could be tragic. For example, On January 18, 2002, 31 of 112 cars of a Canadian Pacific Railway train derailed near Minot, North Dakota. Five of the derailed cars contained anhydrous ammonia. These cars were breached, releasing their contents as a vapor cloud. The incident resulted in one death, 11 serious injuries, and more than 300 other injuries. Among the injured were two crew members. Direct damages amounted to more than \$3.0 million, but environmental remediation costs were reported to exceed \$10 million. Track defects were determined to be the primary cause of the accident (National Transportation Safety Board, 2004).

To minimize the potential for such accidents, federal transportation agencies have issued regulations requiring railroads that transport certain hazmat commodities (such as ammonia) perform a comprehensive safety and security risk analysis in order to determine and select routes which pose the least overall risk. These analyses include a review of specific risk factors including input provided by state and local governments. The top 15 of the 27 risk factors are listed below:

1. Volume of hazardous material transported;
2. Rail traffic density;
3. Trip length for route;
4. Presence and characteristics of railroad facilities;
5. Track type, class, and maintenance schedule;
6. Track grade and curvature;
7. Presence or absence of signals and train control systems along the route (“dark” versus signaled territory);
8. Presence or absence of wayside hazard detectors;
9. Number and types of grade crossings;
10. Single versus double track territory;
11. Frequency and location of track turnouts;
12. Proximity to iconic targets;



13. Environmentally-sensitive or significant areas;
14. Population density along the route;
15. Venues along the route (stations, events, places of congregation);

The attributes of the Valley Railroad, such as absence of signals, environmentally-sensitive or significant areas along the route, and that there are other possible routes on which hazardous materials are already destined, would likely preclude the Valley Railroad from being designated as a hazardous material rail route.

Alternative Modes

No matter how goods are moved into and out of a community, there is risk of an accident. Typically, the alternative to movement of goods by rail is truck. Truck and rail accidents are different in nature and cause different problems, though either can be mitigated effectively with appropriate safety programs.

Trucks move in an environment where safety regulations are somewhat limited. Other than driver licensing programs and Department of Transportation inspections, there is little control over the movement of trucks and evaluation of the condition of driver and vehicles. Even so, truck accidents are not often catastrophic. However, truck accidents usually result in many more fatalities than auto-only accidents and the disruption caused by truck accidents can inconvenience many people and cause significant environmental damage.

In contrast, the design of railcars is more focused on enduring an accident and therefore, routine railroad incidents usually result in fewer consequences than comparable incidents involving trucks. Minor rail accidents typically involve fewer people, fewer disruption, and less environmental damage. However, a major rail incident can be much more catastrophic and can result in the evacuation of a neighborhood or an entire town. When railcars fail, damage to freight, equipment, and the environment tend to be much more severe simply because of the much greater equipment capacity.

2.3.3. Valley Railroad Line

Environmental risk along the VRR Line is best looked at in terms of risk assessment and risk mitigation. Risk assessment involves identifying accidents that may potentially occur and estimating the likelihood of their occurrence. The context of the VRR Line is inherently safer than most rail corridors. It has limited at-grade crossings, it is not in an urban environment where other unanticipated conflicts could occur, and there is limited rail traffic along the line, thereby limiting rail to rail conflicts. In total, the railroad operating environment along the VRR Line is relatively safe and free of obvious risks that would result in an accident. The one condition located along the line that represents a potential operating and environmental risk is along the bank of the Connecticut River and other streams where the possibility for bank erosion and associated track failures could result in environmental impacts. The potential for flooding across the tracks appears to be high.

Risk mitigation means to devise a scheme that can reduce the probabilities of accidents occurring, or given that the accident will occur, how severity and resultant impacts could be reduced. As noted above, the one condition that represents a risk is the proximity of the track to the Connecticut River and the potential for flood-related damage. The best environmental risk mitigation for the location is the frequent inspection of the line and making repairs as soon as needed. As noted in a recent inspection report, the Valley Railroad Company has recently initiated a program of increased maintenance along the northern segment of the line. This will allow them to identify and repair any bank erosion that appears to be threatening the line. As noted, this is most often done through the placement of stone or large boulders

(called rip-rap) to solidify the bank and minimize or eliminate any further erosion. In operating segments, the best and most typical mitigation is to inspect the line prior to operation during periods of heavy rain or high water. It is anticipated that this is a normal operating procedure and a process that would be undertaken whether tourist train or freight trains operate along the line.

Appendix C. Impacts and Public Benefits

For this study of impacts and public benefits, two primary uses of the existing Valley Railroad (VRR) right-of-way (ROW) were considered: freight rail use and expanded tourist excursion rail service. In addition, general information related to tourist activities is also provided. The intent of this analysis is to inform the public and select persons of the economic benefits and/or impacts generated by each of these uses. This information may be useful in town planning efforts, as well as more regional initiatives.

3.1. Benefits versus Impacts

There are a number of different ways to think about how a project may benefit or impact the public. Often, people point to jobs generation as an important benefit. For public entities, the estimation of the benefits to society that are likely to be generated by a proposed improvement is most critical. Municipalities may be concerned with potential tax revenue.

While there are generally accepted methodologies for estimating each of these types of benefits and impacts, not all benefits and impacts can be measured for all types of projects. Data and methodological limitations may impede conducting, for example, a public benefits analysis of a tourist excursion train. In contrast, estimating expenditures and the economic impacts (e.g., jobs) associated with tourist activities is a relatively simple activity. Similarly, there are approved approaches for estimating the public benefits generated by, for example, moving cargo out of trucks and onto freight rail cars. The economic impacts of freight rail may be more difficult to quantify, primarily because freight rail is a private business and there may be confidentiality concerns.

Estimating public benefits, tax revenues, and economic impacts are all acceptable ways of discussing benefits of a project. Comparing the economic impact of tourist rail to public benefits associated with freight rail to property value changes, however, is not an apples-to-apples comparison. As a result, this assessment highlights the individual benefits and impacts generated by different rail uses along the VRR ROW, but it does not include a side-by-side comparison. Economic impacts related to the actual construction of either a freight rail line or an upgraded tourist excursion rail line are provided, as well as public benefits and costs associated with freight rail. Freight rail impacts on property taxes are discussed, and economic impact estimates for tourist excursion services and general tourism activities are also offered. The intent of these metrics is to provide useful information to the public and select persons who will ultimately make planning decisions that are potentially impacted by the railroad's use.

3.2. General Methodology

For the benefits assessment, three different metrics are considered: public benefits, economic impacts, and tax revenue impacts. A more qualitative discussion of the impacts and/or benefits of each potential rail use is also provided.

The first section of this chapter discusses the estimation of jobs anticipated by the construction of an expanded tourist excursion rail service or freight rail upgrades. The next section considers the public benefits associated with freight rail. Questions that are contemplated during the freight rail benefits analysis include:

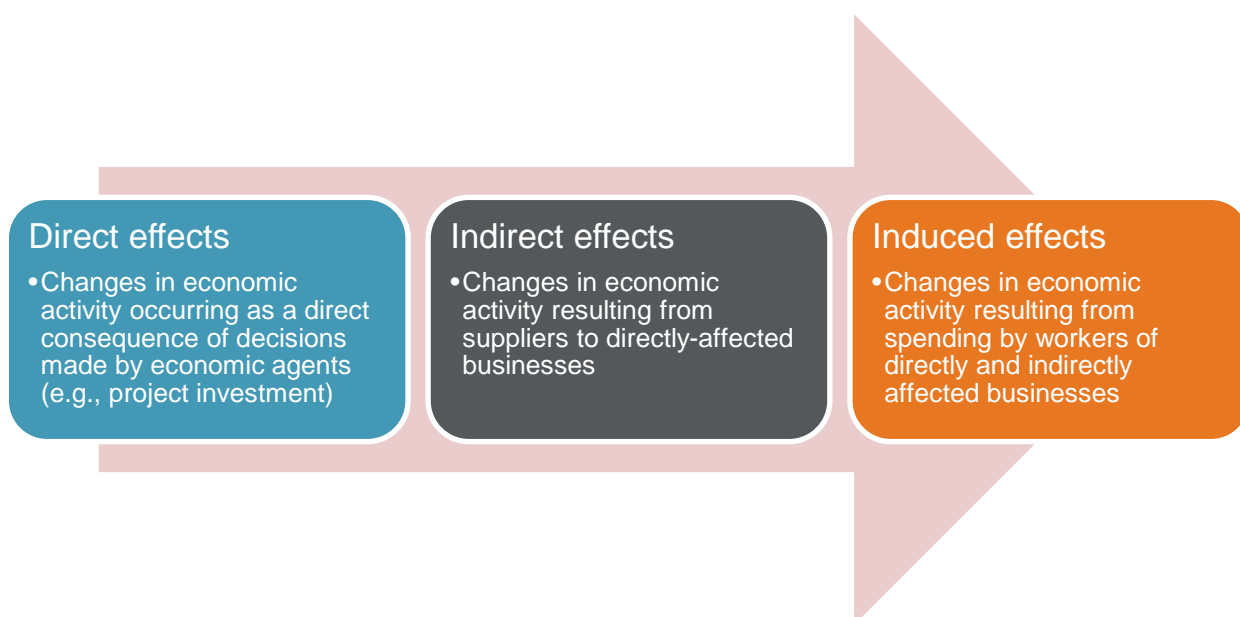
- Does the project reduce carbon and non-carbon emissions?
- Will the project save people time?
- Will fewer accidents occur because of the project?

Expected impacts on property values due to a new freight rail service are also provided.

Jobs generated by tourism spending are estimated for the existing tourist excursion service and also for potential growth in that service, based on the experiences of Connecticut, other New England states, and tourist excursion rail services in the northeast. General tourism impacts are also provided.

3.2.1. Construction Impacts

Economic impact analyses utilize expenditures and multipliers by industry to estimate direct, indirect, and induced effects. The figure below describes each of these effects. In general, direct effects are those associated with the direct expenditure; for example, the construction expense for upgrading the VRR ROW to accommodate freight rail. Indirect effects are those expenditures made on goods and services that support the direct investment. Induced effects are generated when employees of businesses associated with the construction and indirect activities spend their wages.



There were two primary improvements considered for this study: upgrading the existing track and rebuilding the currently unused portion of the ROW to accommodate freight rail; extending the unused portion of the ROW to support expanded tourist rail operations.

Upgrade Entire Right of Way to Support Freight Operations

This improvement would include:

- Upgrades to support a 286K lb. freight car;
- Following current AREMA standards;
- Using higher-grade materials to reduce O&M costs;
- Upgrading the track upgrades to meet or exceed FRA Class 2 standards; and
- Installing ties, replacing defective joint bars, tightening of bolts along the line.

The table below itemizes key cost components:



Table 3.9: Upgrade Entire Right of Way to Support Freight Operations

Component	Cost
Structural (Bridge) Cost	\$2.5 million
Track Costs	\$22.0 million
Engineering & Construction Maintenance Costs	\$2.5 million
Contingency	\$3.0 million
Total	\$30.0 million

Expand Existing Tourist Excursion Service

An alternative to upgrading the entire line to support freight rail service would be to upgrade the currently unused portion of the ROW to accommodate expanded tourist excursion activities. Improvements would include:

- Lowering demand/stresses placed on the track infrastructure;
- Improvements concentrated in MP 12.9-21.7 corridor segment;
- Tie replacement rate of 1,280 ties per mile due to generally poor tie condition in the segment; and
- Upgrading to put the corridor in a FRA Class 3 tie-compliance level.

Table 3-2 presents the key cost components for this upgrade.

Table 3.10: Expand Existing Tourist Excursion Service

Component	Cost
Structural (Bridge) Cost	\$2.5 million
Track Costs	\$1.8 million
Engineering & Construction Maintenance Costs	\$0.5 million
Contingency	\$0.5 million
Total	\$5.3 million

Based on the Council of Economic Advisors' (CEAs') study of the job impacts associated with public investment in infrastructure, the freight rail upgrade of \$30 million could potentially generate 390 job-years. One job-year is equal to one job for one year³⁵. Upgrading the underutilized portion of the existing ROW to accommodate additional tourist excursion activities is estimated to cost \$5.3 million. This investment would generate 69 job-years, based on the CEA methodology. While some of these jobs would be available to residents of the region, construction-related specialty services would not likely be available in the immediate area of the VRR ROW. As a result, many of the jobs required to improve the railroad infrastructure would not accrue to the residents of the Connecticut River Valley.

Studies suggest that most of these jobs, approximately 68 percent, would likely be in the construction sector. Another 10 percent would likely be in manufacturing and six percent in retail trade. The remaining jobs would be spread across other economic sectors.

³⁵ https://www.whitehouse.gov/assets/documents/Job-Years_Revised5-8.pdf

When freight rail projects are evaluated by entities such as the United States Department of Transportation (USDOT), the focus is typically on the benefits to society that the project is likely to generate. For freight rail, these public benefits include:

- Reductions to carbon and non-carbon emissions
- Accident reduction
- Pavement maintenance savings
- Roadway congestion impacts
- Cost savings to local shipping operators

USDOT provides guidance on measuring these public benefits, including parameters and assumptions that are recommended for use in this benefits estimation. For this study, this guidance was utilized by the team. Where possible, regional parameters and other data were utilized in the estimation of benefits.

A first step in estimating public benefits of a potential freight rail investment is to determine how the existence of a freight rail option may alter the way that existing shippers transport their goods. The HDR team contacted businesses in the region that, based on experience and conversations with stakeholders, may have some incentive to utilize freight rail rather than truck. Businesses that ship or receive heavy, bulk materials that are not time sensitive, such as sand, aggregate, or scrap metal, may be suited to freight rail transportation of their products. In contrast, manufactured goods that are delivered in small quantities are not generally suited for freight rail service. Instead, these sorts of commodities are more likely to be shipped by truck.

HDR's outreach identified that many of the businesses located very close to the existing VRR ROW tend to operate in a just-in-time environment and serve small- to medium-sized customers. As a result, the relatively longer time to ship by freight rail, along with insufficient scale of production to support a full train car load, means that these businesses are not likely to utilize freight rail service, even if it was available at their back door. There were several businesses that did indicate that they would consider freight rail service if it were available, but many businesses that the team contacted indicated that they did not see a need for this service and would be unlikely to utilize it if available.

Calamari Recycling and Tilcon are the two primary businesses that would consider using VRR freight rail service if it were offered. Other businesses that were contacted varied in terms of interest. Some felt that the presence of freight rail service on the VRR might induce some businesses to relocate closer to the railroad, but this was anecdotal and no businesses were explicitly named. Most businesses rely on trucking for reasons related to their operational scale or their customers' needs.

Calamari Recycling is a full service scrap metal recycling facility located in Essex, Connecticut. Its key products are steel and construction/demolition debris. The site is positioned roughly 0.1 miles from VRR. Presently, Calamari transports its scrap metal and construction debris by truck. This is despite the fact that some of its customers are as far away as California. Based on discussions with this business, it is estimated that they ship 4,000 tons of steel each month. This tonnage is primarily local. The company also ships 4,000 tons of debris per month, most of which is traveling to Ohio. Because the freight is heavy and traveling over a long haul, freight rail may be a viable option for Calamari. Currently, Calamari moves all of its debris and steel via truck. If freight rail service were available, the company would consider using it. It should be noted, however, that Calamari does not currently have access to the railroad. They would need to invest in a way to effectively access the railroad in order to make use of any freight rail service provided on the VRR ROW. Railroad access for Calamari could be either the

construction of a siding on to the Calamari property or construction of a siding along the railroad with an improved roadway and loading area adjacent to the siding.

There are several factors that would play into Calamari's decision to shift a portion of its tonnage to freight rail. These include the relative cost of shipping by rail versus truck, as well as the investment required to access the railroad. Currently, Calamari does not have a direct connection to the railroad. Calamari currently operates its own truck fleet for shipping, but strongly believes converting the VRR for partial freight use would result in significant operating cost savings to them. Discussions with Calamari also suggest that they would be willing to invest to access the railroad, though it would depend on the expense associated with doing so. Nonetheless, Calamari represents a typical freight rail customer. They move large amounts of heavy and bulky commodities over relatively long distances.

Tilcon is another potential freight rail user, based on research conducted by the HDR team. They are the dominant supplier of stone aggregate, concrete, and hot asphalt in Connecticut. These commodities frequently move by freight rail. Tilcon operates eight facilities that are accessible by rail, including facilities in Wallingford and Old Saybrook. Conversion of VRR would provide a route that provides more operational capacity and flexibility to connect the quarry in Wallingford to the facility in Old Saybrook. Whether Tilcon would choose this alternate route depends a great deal on the relative operating costs between their current routing and a new route. Tilcon representatives did not choose to be interviewed as part of this study. If a freight rail project is defined, additional efforts to meet with Tilcon should be pursued.

Currently, trains carrying Tilcon product run south from Wallingford on company-owned tracks to North Haven, where a connection is made to CSXT branch line, which then interchanges onto Amtrak Northeast Corridor, traveling 23 miles to Old Saybrook. If the VRR were able to handle freight rail and Tilcon chose to use this route, trains would run north from Wallingford to Middletown on the existing Middletown Secondary tracks. They would then travel south on the existing Laurel Branch to Mamoras, where they would then connect to the VRR to reach Old Saybrook. Both routes are approximately 36 miles with the route through New Haven being actually 0.3 miles shorter.

A final potential user of the VRR could be the Middletown waste facility. It is located very close to the railroad and interviews suggest that they would be interested in moving their waste via freight rail if the service were available and it were financially feasible. Currently, the facility ships between 2,000 and 3,200 tons of bulky waste per year to Berlin. From there, it moves to Ohio. They also ship metal, cardboard, and paper. During the interview, there was discussion of consolidating regional waste and moving it via rail. This would remove trucks from the local roadways, a key benefit of freight rail service. If a freight rail project is defined, a discussion with the Middletown waste facility is advised.

If the commodities transported by Calamari and Tilcon were moved by rail rather than truck, public benefits associated with reduced emissions, congestion reduction on roadways and pavement maintenance savings could be generated. Safety benefits could also be generated. Other businesses may also utilize freight rail service, if it were made available, potentially generating additional public benefits.

It should be noted, however, that investing in the infrastructure required to support speculative use of freight rail for two businesses is risky. The analysis conducted for this study is intended to inform the public on the types of benefits that may be generated by an investment in freight rail if a business suited to the use of freight rail opts to use the new service. Calamari is an example of the type of business that often utilizes freight rail because their freight is bulky, heavy, and not time sensitive. Should the State of Connecticut or VRR decide to improve the infrastructure to support freight rail, the costs required for Calamari to access the freight rail service should be included in any analysis conducted to support the

project. Calamari does not have a specific plan for accessing the VRR and project costs are unavailable. With a defined project, Calamari may be better positioned to provide the type of information that would be required for a rigorous benefit-cost analysis. Alternatively, the required infrastructure to provide access could be in place in advance of a larger investment in the railroad. This would mean that only the costs associated with the railroad improvement itself would be relevant to incorporate in the analysis. Public benefits of freight rail should not include Calamari's use of the service without its access. Similarly, it is advised that the state or VRR speak directly with Tilcon to determine their level of interest, as their use could be an additional source of public benefits.

To offer an example of the benefits that could be generated by freight rail service on the VRR, it is assumed that Calamari (or any other example business that moves heavy, bulky materials over relatively long distances) would have direct access to the freight rail service.

In the benefits estimation, ton-miles were estimated based on the distances traveled to ship and receive commodities and the total tonnage moved by Calamari, Tilcon, and Middletown waste. USDOT parameters were then applied to estimate the potential benefits generated by tonnage diverting from truck to rail. While other users may be induced to use rail, data related to these additional users was not available. As a result, "new business" was not included in the freight rail benefits estimation.

For the study, the following benefits were estimated:

Environmental – Traditionally measured in terms of air emissions and greenhouse gases based on VMT, speeds, and idling. Increasingly, this category also includes noise pollution, though noise was not considered for this analysis.

Safety – The average rates of fatalities and injury accidents per million ton-miles for each mode is calculated to indicate differences in the average cost of accidents for freight movement.

Pavement Maintenance – An externality associated with the wear-and-tear of heavy trucks on roadways, estimated at \$0.11 per mile³⁶ and accrued based on the diversion of truck mileage to rail.

Congestion Reduction – Benefit attributed to users who remain on the highways due to the reduction in congestion associated with trucks using these roadways. Estimated at \$0.12 per mile.³⁷

Shipper Cost Savings – Reflects efficiencies and general differences in the average cost per ton-mile of freight movement by either rail or truck based on estimates of the total costs of shipping freight by mode and the total number of ton-miles of freight moved by mode.

To illustrate how freight rail could benefit the region, Calamari Recycling's operation was incorporated into the benefit-cost analysis. In the benefits estimation, it was assumed that they ship 200 truckloads of scrap and 200 truckloads of steel per month. If freight rail were available, it is assumed that the number of scrap truckloads would reduce to 60 per month with the remaining being moved by rail. All other Calamari operations are assumed to stay the same with trucks transporting the remaining scrap and all steel.

³⁶ Based on the Addendum to the 1997 Federal Highway Cost Allocation Study, Final Report, U.S. Department of Transportation and Federal Highway Administration, May 2000; Table 13. Assuming a 50/50 split of 60,80 kip and rural roadways. Updated to 2014 dollars.

³⁷ Federal Highway Administration, 1997 Federal Highway Cost Allocation Study, Tables V-22, V-23 and V-24; Average of single and combination trucks; dollar values updated to 2014.

In addition to the Calamari operations, Tilcon's rerouting of its Wallingford to Old Saybrook rail operation is also factored into the benefits estimation. Relatively speaking, however, the benefits generated by this rerouting are extremely minimal. USDOT provides parameters for estimating public benefits that rely on total ton-miles. Safety benefits represent a significant share of the total public benefits generated by the freight rail investment. Benefits occur when the risk of a crash is reduced and/or the severity of the crashes is reduced because of the transportation improvement. When calculating safety benefits, USDOT parameters use actual crash data with freight tonnage to generate the average number of fatalities and injuries per ton-mile traveled for a particular mode. This data indicate that there are, on average, 0.0038 truck fatalities per million ton-miles. For rail, the figure is .0005, suggesting that there are more fatalities associated with rail than with truck. In contrast, truck injuries per million ton-miles are estimated by USDOT to be .0875 per million ton-miles. For rail, the figure is .0052 per million ton-miles. The following describes the process of estimating safety benefits, based on USDOT and industry-accepted methodologies and parameters.

Total ton-miles of Tilcon and Calamari are estimated to be 1.2 million per month by truck and 1.6 million per month by rail today nation-wide. If Tilcon rerouted their Wallingford to Old Saybrook trip to use the VRR, and Calamari was able to divert a significant share of their long-haul tonnage to rail, total ton-miles by truck is estimated to be less than 200,000 per month. For rail, 2.7 million ton-miles would be expected. While these are the total ton-miles, only a portion of those ton-miles (based on miles within CT) are utilized to estimate the benefits of freight rail service in this study. The Connecticut portion of the network accounts for approximately 14 percent of the ton-miles moved nationally.

To estimate the number of injuries and fatalities today versus after freight rail is available, the safety rates are multiplied by the total ton-miles of freight moved by mode, and then divided by one million. Total injuries and fatalities are adjusted to reflect that only a portion of these injuries and fatalities would be likely to occur in CT, based on mileage.

For every fatality, USDOT values human life at \$9.3 million. Each injury is valued at approximately \$108,000 based on a weighted average of injury severity costs and the statistical valuation of a human life. The product of net injuries (e.g., injuries with no freight rail service less injuries with freight rail service) and the injury value is calculated to estimate the total safety benefit related to injury reduction. A similar calculation is made for fatalities. Their sum is the total safety benefit shown in the table below.

Other benefits were also estimated, using ton-miles and based on USDOT guidance. In sum, total single-year "snap-shot" benefits associated with freight rail service in the region are estimated to be \$216,000. Most of these benefits are monetized values of avoided costs and are not tangible benefits that could be actualized. Furthermore, it is not appropriate to simply multiply the annual benefits over multiple years to compare against the life cycle of the asset due to the time-value of money and the lack of information about future use. A dollar today is worth more than a dollar five years from now, even in the absence of inflation, because today's dollar can be used productively in the ensuing five years, yielding a value greater than the initial dollar. Future benefits and costs are discounted to reflect this fact. If a time series analysis of this project were conducted over the life of the asset, next year's monetized public values would be less than this year's monetized public values because of discounting. Additionally, no information or projections are available to indicate future use of the rail line or the costs associated with this use.

It should also be noted that the \$30 million estimated to upgrade the VRR ROW to accommodate freight rail does not include any costs incurred by a business to access the service. For example, sidings and other infrastructure would need to be built for a company located near the VRR ROW to utilize rail service, even if it were available. Estimating the access costs to individual companies located along the ROW is beyond the scope of this assessment. In addition, freight rail operating and maintenance costs

are not factored into the \$30 million. The purpose of this analysis is simply to provide some sense of the types of benefits that could be generated by freight rail, as well as the relative magnitude of the public benefits based on USDOT guidance. Due to the lack of information on future costs and future use potential, the “snap-shot” benefits cannot be multiplied in an attempt to generate a future comparison of life-cycle benefits to costs.

Table 3.11: Example Total Benefits Generated by Freight Rail Service on VRR

Benefit Category	Connecticut Benefits
Emissions	\$75,439
Safety	\$100,258
Pavement Maintenance	\$13,858
Congestion Reduction	\$15,495
Shipper Cost Savings	\$11,268
Total Annual Benefits	\$216,318

3.2.2. Impact of Freight Rail on Property Value

By its nature, freight rail creates what is commonly referred to as “nuisance effects.” These effects can largely be attributed to the noise caused by freight rail service. As a result of these effects, it is theorized that proximity to freight rail lines will cause a negative impact on property values. The key factors in assessing whether or not this impact exists, and if so, to what extent, are proximity to freight rail tracks, and frequency of freight rail trips.

Research on this impact is limited and relatively new. However, studies generally agree that proximity to freight rail does indeed have a negative impact on property value. This impact typically trends in a gradient manner, meaning that the closer a property is to the tracks, the greater the negative impact on the property’s value. In Northeast Ohio, residential properties close to freight rail lines saw a decline in property value of approximately 4-8 percent, as freight service was re-routed throughout the region. While the effect of proximity to freight rail was shown to be statistically significant, properties that were impacted the most tended to be smaller. It is believed that this is because larger units are more prevalent in suburban areas, where other location-based amenities (i.e. quality of school district) which were not modeled may positively affect property value; conversely, smaller units tended to be clustered in urban areas.

Furthermore, the number of freight trips has also been shown to have a negative impact on property value. Based on repeat-sales data of residential properties, increases in freight rail traffic have been shown to moderately decrease historical growth in home values within a 1/3 mile band surrounding the freight tracks. This growth was approximately one percent less than residential property values in the same county outside of the 1/3 mile area. HDR estimates that more than 500 houses are located within 750 feet of the VRR ROW. Assuming town specific mill rates and average assessed values, the total property taxes paid by these homeowners is estimated to be \$3.2 million per year. Based on the experiences of other communities, freight rail service initiation would potentially decrease property values by 4-8 percent, resulting in a loss of \$128,000 to \$256,000 per year. Because significant commercial and industrial development associated with freight rail service is not anticipated, no property tax revenue estimates were generated for potential commercial development. Looking from the other side of the issue, studies have also shown the value of decommissioning seldom-used or nonoperational existing freight tracks for recreational purposes. This research indicates that significant consumer surplus (over \$7 million annually) can be reaped by converting these freight railways into public greenways. However, it is

important to keep in mind that this effect is highly dependent on local needs and attitudes, and particularly, how vital this freight service is to the region. For regions where freight rail had a significant public benefit – typically areas with limited connections to other regions for freight – the value of converting the rails to recreational use decreased.

3.2.3. Impact of Tourism in Connecticut

It is widely acknowledged that tourism activity is a source of positive economic impact to the region. A number of studies were reviewed to help quantify this impact. The studies that were reviewed include tourist excursion services, as well as general tourism activities in Connecticut and other New England and Northeastern states.

In Connecticut, tourism is estimated to generate \$1.2 billion in state and local revenues and more than 110,000 total jobs annually.³⁸ The tourism economic activity that is generated can range from visiting a museum or other cultural facility to visiting a national park. In 2011, state parks and forests generated \$1 billion a year in revenues and 8,800 jobs. Scenic rail service is another type of tourism that provides positive economic impacts..

Park visitors who are CT residents generally travel in a party of, on average, 3.5 people. According to studies related to CT parks, each party of visitors who live in the state will generally spend \$175.24 per day, net accommodations. This translates to approximately \$50 per visitor. For those residents who stay overnight, the average spending is \$233.45 per party or \$66.70 per visitor. When a non-resident visits a Connecticut park, they generally travel in a party of 4.2 people. Average spending is \$183.99 per party, net accommodations, or \$43.81/visitor. Non-residents who require accommodations generally spend \$230.34 per party, or \$54.84/visitor.³⁹

The Connecticut Center for Economic Analysis is currently conducting a study that may provide information related to the potential economic impact of a multi-use trail. It was commissioned by the River COG and may provide some additional insight on the potential impact of a multi-use trail on the regional economy. A Maryland study cited by Connecticut Department of Energy and Environmental Protection suggests that overnight multi-use trail visitors spend \$114 per day and day trippers spend \$17 each trail use.⁴⁰

Other studies found similar spending patterns. A general tourism study conducted by Plymouth State University in 2012 estimates that the average spending per visitor day is \$82.23. For every \$1 spent, the typical NH tourist spent: \$0.62 – Hospitality and leisure sector; \$0.26 – Retail stores (including food and gasoline purchases); and \$0.07 – Government services and licenses. The remainder is spent on wholesale trade/transport sector, other services, agricultural products, educational and health care services. It is likely that these spending patterns are similar to those in Connecticut.

The Essex Steam Train reported 159,030 train riders in 2014. It is estimated that a scenic rail visitor spends \$28.32 per person and a typical traveling party spends \$142.77. Based on these estimates, Essex Stream Train visitors directly spent \$4.5 million in 2014. This does not include the induced and indirect spending that would be generated by this direct spending. If rail service were expanded to include additional holiday trains, for example, this total spending would increase and generate additional economic impacts in the region.

³⁸ “The Economic Impact of Arts, Film, History and Tourism in Connecticut,”
http://www.friendsctstateparks.org/FCSP/Economic_Impact_Study.html.

³⁹ http://www.friendsctstateparks.org/FCSP/Economic_Impact_Study.html

⁴⁰ “Maryland of Wonder,” East Coast Greenway Alliance, Baltimore, MD, April 27, 2013,
http://www.ct.gov/deep/lib/deep/greenways/east_coast_greenway_alliance.pdf,

3.3. Summary

The following are the HDR Team's findings of Impact and Public Benefits, based on the evaluation of the freight rail and expanded tourist excursion rail service uses of the VRR ROW:

Freight Rail Impacts

- Based on limited studies, properties close to freight rail lines saw a decline in property value of approximately 4-8 percent as freight service was re-routed throughout the region. Based on existing mill rates and average assessed values for RiverCOG communities, this could mean a decrease in property tax revenue in the region of \$128,000-\$256,000 annually.
- May impact Valley Railroad business model because of additional operating costs and regulatory oversight required for expanded service.
- Potential environmental impacts if hazardous materials are transported on the freight railroad.
- Increased train frequency, which may increase the potential for accidents and noise.
- Potential to impact scenic rail service, which has LWCF implications.

Freight Rail Public Benefits

- A \$30 million investment to upgrade to freight rail is estimated to generate 390 job-years.
- This same investment is estimated to yield \$216,318 in regional public benefits, assuming the infrastructure is in place for a "typical" freight rail user to access the new rail service.
- Based on USDOT guidance and benefits estimation methodologies, most of the public benefits generated by the freight rail investment are due to improved safety when freight is diverted from truck to rail.
- Could provide railroad infrastructure redundancy.

Expanded Tourist Excursion Rail Service (Tourism) Impacts

- Additional operating and maintenance costs to VRR.
- Potential for slight increase in traffic on local roads.
- Increased train frequency, which may increase the potential for accidents and noise.

Expanded Tourist Excursion Rail Service (Tourism) Benefits

- A \$5.3 million investment in expanding tourist excursion service to the north is estimated to generate 69 job years.
- Essex Steam Train riders are estimated to have spent \$4.5 million in 2014. Each rider of the train is estimated to spend \$28.32; more riders due to increased service would generate additional spending that would have a multiplier effect in the region.



Other Potential Tourism Impacts

- Every tourist to CT is estimated to spend \$44-\$82 per day, based on studies of spending patterns of CT park, tourist excursion, and general tourist visitors. This suggests that any increase in tourist activity in the region is likely to generate significant economic activity in the region.

3.4. Sources Used

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Rail Freight in the Housatonic Region, Prepared for the Housatonic Valley Council of Elected Officials (HVCEO) by HARTransit, July 2011.

Appendix D. Land and Water Conservation Fund

Exhibit 2

4/26/1968



UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF OUTDOOR RECREATION
WASHINGTON, D.C. 20240

NOTIFICATION OF
LAND AND WATER CONSERVATION FUND GRANT

State: Connecticut Amount of Grant: \$400,000
Number: 06-00049 Federal funds will be matched by:
Sponsor: Department of Agriculture and Sec. 2-g-1, S.A. 276, 1967
Natural Resources

State Liaison Officer: Joseph N. Gill, Commissioner, Department of Agriculture and Natural Resources

Description of Project: Secretary Udall, Department of the Interior, has announced a \$400,000 assistance grant for the Lower Connecticut River Area. This project, entitled "Accelerated Land Acquisition Program," is for the acquisition of 1695.5+ acres of land in the Lower Connecticut River Valley. The project is divided into two stages. The first stage proposes the acquisition of 415.5 acres in the Towns of Lyme, East Haddam, Haddam, Essex, Cromwell, and East Hampton, plus the additional 300 acres contained in the abandoned New York, New Haven and Hartford Railroad right-of-way, which extends from Lawrence Station, south of Middletown, south to Old Saybrook. The 415.5 acres will be used to provide the public with expanded opportunities for (continued) The Land and Water Conservation Fund provides funds to acquire Federal recreation lands and waters, and for matching grants to States and through States to local governments for outdoor recreation acquisition and/or development projects. Grant assistance is also provided to the States for the preparation and maintenance of the comprehensive statewide outdoor recreation plan. The fund is supported by revenues from the sale of the annual \$7 Golden Eagle Permit, other Federal outdoor recreation entrance and user fees, the sale of Federal surplus real property, and the Federal motorboat fuels tax.

For further information call:
Congressional Liaison
Washington, D.C.
343 (Code 183) x5777

Regional Director
215-597-7391
Rolland B. Handley
Northeast Regional Office
128 N. Broad St., Philadelphia, Pa.
Edward C. Crafts
Edward C. Crafts, Director
Bureau of Outdoor Recreation



Valid nationwide—\$7 per year...
admits carload of people to all Federal areas

3

Description of Project (continued):

hiking, picnicking, nature study and scenic viewing, and in some areas, hunting and fishing. If it is deemed possible, the abandoned rail line will be converted into a scenic railway.

The second stage will involve the additional purchase of 980 acres in Windsor, Glastonbury, Wethersfield, and Rocky Hill. Generally, the same activities as above will be provided in these areas.

The entire project involves \$1,500,000 in Federal support. The first stage, which is covered by this grant, provides for \$400,000 in Federal assistance. Three hundred seventy-five thousand dollars has been made available to the State of Connecticut by Secretary Udall from the Contingency Reserve Fund; an additional \$25,000 will be derived from Connecticut's regular apportionment of the Land and Water Conservation Fund. The Contingency Reserve Fund is held by the Secretary for unforeseen or emergency needs to meet the demands for outdoor recreation resources. Stage II is not covered under this award.

EXHIBIT C-1

5100
#09-00049

Staked
6/15
D. H. H.
6/15

15 JUN 1976

Mr. Joseph N. Gill
Commissioner
Department of Environmental
Protection
State Office Bldg.
Hartford, CT 06115

Dear Joe:

Our review of the proposed amendment to the September 19, 1970 Agreement between the State of Connecticut and the Valley Railroad Company, which covers lands acquired through Project #09-00049, has focused on the article dealing with freight service.

Although we feel that occasional freight service on the rail line would be permissible, it should be kept to a minimum so as not to interfere with the scenic passenger line or unduly impair other prospective recreation uses such as hiking, etc. As presently written, Article 22 does not sufficiently address these overriding recreation interests.

I would suggest that the article be re-drafted in recognition of the line's primary use to service the recreating public and be resubmitted for our concurrence. All other provisions of the amended agreement appear to be acceptable and will require no further review by the Bureau.

Please call me if I can be of any assistance in this matter.

Sincerely,

Edwin L. Shellenberger
Assistant Regional Director

Appendix E. Study Meetings

During the course of this study, a Stakeholder Group was developed that included specific individuals and groups that had a particular interest in or relevant information for the study. The study team met with the Stakeholder Group on the following dates: October 15, 2014, January 22, 2015, and March 17, 2015.

In addition to meeting with the Stakeholder Group, the study team held Public Informational Meetings to provide information regarding the status of the study and to receive feedback. The Public Informational Meetings were held on October 15, 2014, January 22, 2015, and April 7, 2015. The presentations and meeting summaries are included below for each meeting.



Stakeholder and Public Meeting Summary

October 15, 2014

**UCONN Middlesex Cooperative Extension Center
1066 Saybrook Road, Haddam, CT**

To assist in the development of the Valley Railroad State Park Tourism-Passenger Rail-Freight Rail Economic and Structural Feasibility and Impacts Study (Rail Corridor Study), public involvement will be essential to help the study team identify major issues, review study findings, and provide input throughout the study process. The study team will meet throughout the study process with both a stakeholder group and the public. The stakeholder group includes representatives from railroad companies, the Connecticut Department of Energy and Environmental Protection (CT DEEP), Connecticut Department of Transportation (CT DOT), Middlesex Chamber of Commerce, local civic groups, and interested neighboring property owners.

The first stakeholder meeting and public meeting were held separately on October 15, 2014 at the UCONN Middlesex Cooperative Extension Center located at 1066 Saybrook Road, Haddam, CT. The stakeholder meeting was held at 4:00 to 5:30 PM. The public meeting followed at 6:00 to 8:00 PM. At both meetings, HDR prepared an introductory presentation that introduced the purpose of the study, outlined the study process, and reviewed the four major future use options for the corridor that will be studied.

Following the presentation, attendees were then asked to provide comments on each of these four options: tourist railroad, multi-use recreational trail, passenger services, and freight railroad. Comments received during the presentation and issues discussion are included as part of this meeting summary.

Stakeholder Meeting Comments

The following questions and comments were provided by stakeholders during the presentation:

- Does the VRR lease expire in 2027?
- Kevin Dodd from the Valley Railroad Company (VRR) says “rides” are underway on the upper nine miles of the railroad currently.
- Is the railroad, in part or in its entirety, technically abandoned?
- Question about 40 round trips per day max for VRR. Seems high.
- According to Kevin Dodd, the VRR is a “non-insular part of the general transportation system.”
- Train is never operated over 20 mph according to Kevin Dodd.
- Class 1 from North Chester to Middletown was stated in the presentation. Is this really to Tylerville? Need to clarify which segments are which classes.
- There are flashing lights and gates at a number of grade crossings and bridges that were recently inspected by the FRA according to Kevin Dodd.

- Question if the study team will field verify rail conditions along the corridor.
- Question if the study team will look at other modes of public transit along the corridor. Please note there is a bus system (9 Town Transit) that runs up the corridor already.
- Recent petroleum movement changes, as petroleum from the Midwest comes into Albany and then moves by barge down the Hudson. We should include this as a relevant trend, since it has affected the shipment of other commodities.
- Study team should check with Tilcon and United Industries (Pratt and Whitney) about their freight needs and potential use of rail lines, including the Laurel Branch in Middletown.
- Kevin Dodd stated that the track was initially designed for 50 mph speeds.

Following the presentation, HDR led an issues discussion to allow stakeholders the opportunity to share their thoughts, concerns, or ideas related to the four future options for the use of the corridor. Stakeholders divided into small groups and wrote their comments on post-it notes. Each participant placed his or her comments on a shared aerial image of the corridor and discussed their comments with the rest of the group. Each small group then shared the collective comments with the larger group.



The following comments, organized by topic, were received during issues discussion:

Tourism/Excursion:

- Currently 90% of VRR excursions go to Chester only. Why expand?
- Expanding tourist train will reduce public outdoor recreation currently occurring in the nine northern miles.
- Is there any demand for north expansion?
- The northern section should be retained for the purpose it was purchased for outdoor public recreation.
- If active trails are converted to steam trains, users not part of the train ride would be trespassing.



- What is the feasibility of a train-trail? (Higganum Cove Nature Trail—the train would stop in Haddam.)
- Would the towns be responsible for the costs of crossings/signals, etc.?
- If the tourist train continues north to Middletown (from Essex), what would the benefit be to through towns on the line?
- Tourist Train Nodes—(now or potential)—Tylerville, Cross River access—state of good speed operation (future). Deep River Harbor, River Point nice town (now)—Essex Main Station, good RTE 9 access, nice town (now)—Old Saybrook nice town, Route 95 and Amtrak (future).
- The Farmington Valley Trails Council says that their trails have 250,000 users per year.
- Verify how north the tourist train operates.
- Very narrow ROW and twisting track makes it difficult to upgrade inside existing rights.
- E. Haddam/Tylerville—ideally could make a tourist destination, but that potential has not materialized for tourist train because of steep slope and unfriendly bridge makes tourists pedestrian traffic difficult.
- Limited passenger (tourist) estimates in the 1990s-2000s were upwards of 180,000 people. Now number is 140,000. This says tourist of VRR is down.
- Roads crossing to get to private homes- at Hoilon Road, Haddam Road, Gates Way, and Haddam Landing.
- Currently VRR is not connected to national rail system. If the rail line is converted to a passenger or freight use, it would require the State of Connecticut to purchase another 300 acres of conveyable views of the CT river.
- Pratt and Whitney location—security issues, defense industry location. Non-use for 10-15 years. Environmental—wells.
- American Heritage River—enjoying the natural environment on foot is much more intense experience than from a car, train, or bus. Due to speed and physical separation.
- Tourists do not have attention span to travel further than it currently does. Great asset for regional tourism and economy. Potential to allow passenger to bring bikes on trail and bike or hike from Tylerville north.
- Tourist train should expand to include local use and biking.
- Major economic generator/tourist attraction. Maintain the viability of the track for future uses.
- Expand connections to existing trails to allow for train to hike/bike/paddle. New England Natural Scenic Trail, CT bike plan, CT river blueway (national)
- The tourist train is a wonderful amusement. However, it is a private enterprise. The rail is inside the Valley Railroad State Park and should be publically accessible. The tourist train should stay as is.
- Haddam to Middletown cuts off public recreational use. (X-country, hunters, walkers...etc.)
- Conservation funds used to purchase “health & vitality.”
- Cost to convert from recreational area to other use. (State Park to Train Use).
- Alternative use/property needed to compensate.
- What share state purchase vs. fed?
- Steam trains operations means no trespassing.
- Very positive light by towns; would like to see other modes of transportation within park (Old Saybrook, Tylerville...etc.).
- Tourist train is great. Could be expanded to access existing trails (bike/hike/paddle/train).
- Essex train is private enterprise.
- Train should continue to operate as is with improved intermodal connections.
- Greater distance not consistent with attention span of tourists.



- Many wells on Pratt & Whitney and along the corridor.
- Middletown Development Initiative underway—waterfront recapture project.
- Conversion costs for alternative uses.
- DEEP owned section stops near Haddam-Middletown portion. DOT portion accesses P+W. Industrial uses concerns in Middletown. United Technologies employs many people. Security issues with excursion train in northern part.
- Tie-ins important to get into town centers.
- 19th century track & ROW; 25' wide; not cuts/fills on flats. Northern area w/ cuts & fills. Re-engineering will have ROW and engineering problems.

Trails:

- Will satisfy Land and Water Conservation Fund Act (LWCFA).
- Ties in to VRR, boats, buses, etc.
- As a family, we travelled all the way to Cape Cod specifically to use the bike paths. (Bike tourism is lacking in CT). Great use of northern 9 miles.
- Multiuse= winner! Winner for Valley Railroad. Winner for town's economy, winner for state residents, winner for environment. Author included a map.
- Multi-use can be economical on a seasonal basis. 1 season= train and 2 season= walk, bike—or by determining freight in one section/work with one another or saving walk now unused section but saved for RR later.
- ROW is narrow does not allow side by side multiuse if one the uses is rail. Other multi-use (bicycle, pedestrian) possible.
- Continuing the tourist of Tylerville is fine and will continue to draw tourist—multiuse trails will bring new people to the area—different tourists.
- Multiuse should include—hiking, biking, paddle sports; with pick-up and put-in locations along the 9.2 miles of the trail. Active recreation as opposed to passive recreation—sitting on trains.
- Yes, yes, yes, multiuse trail. Economic development to towns along the line. Devise a loop going up along land and come back on river.
- Limits long term viability of the track. Eliminates possible future uses and limits the options for planning.
- P&W security.
- Can tie into local trails.
- Rails to trails gives access to all, not just pd. passengers, to the Connecticut River (American Heritage Trail). Potential to tie-in to other regional R2T lines.
- Trail is good for your health! Can be used by everyone, even handicapped because it is flat grade.
- Pratt and Whitney (Maronas) security.
- Economic development for towns.
- Loop on land to river.
- Trails eliminate possible future uses & options.
- Winner for town, VRR, state and environment.
- Bike trails could bring people in.
- Divide railroad into different uses.
- Current use change in the future.
- Be imaginative.
- Active recreational uses including boats, etc. as opposed to passive recreation on train.
- South of Tylerville activity brings tourists.
- Northern section could boost tourism and bring different tourists for both active and non-active train uses.
- Beautiful!



Passenger Rail:

- Forget about any station and track—the trip would take 2 hours one way from Old Saybrook to Middletown at 15 MPH.
- Will require LWCFA conversion—cannot see demand.
- Very curvy—slow trains.
- Without Commuter Rail service or transfer service from rail station to destination in other areas in our region—passenger service would not make sense at this time.
- Trains are not green unless electrified. Horrible to see along river. Buses, “hybrid” direct to stops at business, etc. Future, even more clean.
- No for inner city—now have a successful bus systems tri Hartford with parking area in each town.
- Yes for tourism and recreation—transport to new developed outdoor recreation area north of Tylerville.
- No good! Given much faster travel on Route 9 and the more practical potential for buses.
- Re-engineering track for passenger traffic speed would be a major operation with signaling, construction.
- Would need a real study to determine demand. Are there people who need/want to ride a train?
- Low need.
- What is the need?
- Encourage Commuter Rail in traditional commuter area with in metropolitan districts. However, doing so in rural areas would encourage suburban sprawl and exurban commuting. (Making state one big suburb).
- Without Commuter Rail service/transfer service at stations, passenger service makes no sense.
- Buses exist on Route 9.
- Infrastructure costs (e.g. Station) not being factored. No culture of this type of travel.
- Potential connection to other areas. Could alleviate traffic.
- Trains not green if not electrified.
- Route 154 bus system? Cost for passenger rail makes no sense. Tremendous potential for bus system.
- Speed limits on tracks.
- Transit system was great, but no demand.
- 50 MPH traffic design on the line.

Freight Rail:

- Neither density nor industry exists in this area.
- Freight demand in Riverfront region is not identified.
- Tilcon is only potential freight user.
- United Technology (P&W) plant want freight protected.
- Derailment or accident could be life threatening given some locations of houses.
- Higganum history of shipping at risk.
- Pratt and Whitney?
- Land and water conservation—Federal conversion of rail line required.
- Town’s economy/public uses are inconsistent with required trends. Safety concerns.
- Through freight traffic only. No local benefit.
- We have no use for freight trains in our region. Cost prohibitive for the return.
- No—this is entirely contrary to the interests of the towns; economy, public uses—the region, growth due to family resources in economy all want clean new businesses.



- Safety!
- Doubt that short haul makes sense.
- LWCFA conversion.
- Long haul market to Old Saybrook doubtful.
- The region—tourism, dollars, good speed, etc. Freight—large manufacturing items (bulldozers), large bulk items (gravel? fuel) Not in any local towns plans of conservation and development.
- It is not right that taxpayer's money has been and will be used to fund a for-profit corporation to expand its operation on land that is supposed to be a state park.
- Freight or passenger service would disrupt historic area of Haddam and Higganum. There is no congestion to be relieved by Commuter Rail. There is no need for freight from companies along the CT River. Other may use a freight line here at the expense of our communities.
- Does not fit into modern use of riverfront. Consider an oil spill on the river.
- Denies public access. Coordination of freight travel is difficult when dealing with Amtrak.
- Problems with roads that cross the tracks, grade crossing issues.
- Derailments, et al. would be devastating to houses that are adjacent to rail (i.e. Landing Road, Higganum.)
- Neither the population nor industry exists in this area to support the investments of improvements in rail for freight.
- Has the potential to assist with movements of goods and services in Middlesex County. Should not be ruled out.

Public Meeting Comments

The following questions and comments were provided by stakeholders at the meeting held at 6:00 PM on October 15, 2014.

- Jean Davies from the River COG noted that there is an Amenity Asset study being conducted through UConn presently. In addition, an economic growth plan is in the works with River COG. An update to the State Freight Plan is about to get started.
- The study team needs to check on Valley Railroad lease conditions and determine status of rail line (i.e., is it technically abandoned, rail banked).
- Presentation notes that steam train has 140,000 annual visitors. Is this just rail or rail/boat combo?
- VRR is not a common carrier formally. The VRR is an excluded passenger rail only operations.



Following the presentation, HDR led an issues discussion to allow attendees the opportunity to share their thoughts, concerns, or ideas related to the four future options for the use of the corridor. The following comments were received during issues discussion:

- Heavy recreational use on northern 9 miles.
- Entire park would be trespassing if excursion train service expanded.
- Not acquired for transportation, rather recreation.
- Keep trains south.
- Promote public recreational use on northern end.
- Best use hikers, cyclists, tourists—some interest in eliminating all rail use.
- Make a national park.
- Entire 22 miles should be preserved—no rail.
- \$1.1 million purchase of Old Saybrook to Middletown 1,200 acres of marshland. No stipulations on what it should be.
- Concerns about transportation and people moving around.
- 20 years later Essex Stream RR got the rights to run scenic railroad excursions.
- Opportunity for rail—boat back to Essex after arrival by train to Middletown. Economic boon to this area.
- Self-propelled Budd cars could get drivers off Route 9.
- Maintenance/repairs needed to ROW, but could be done within a year to provide Commuter Rail service to Hartford.
- United Technologies is potential private funder to support repairs to Railroad, along with CT Dept. of Highway.
- Tragic to economy if only recreational use.
- Environmental conscious, energy efficient, educational excursion train. (Solar powered? light rail). Puts Haddam on the map as environmentally conscious area.
- 9 Town Transit exists.
- Multi-use trail supports economy. Farmington River trail gets 250,000 users a year who do other things (lunch, etc...)
- Lower CT River Valley should be preserved as a national park. Plan being developed by conservation group.
- How long do tourist train passengers want to be on the train? Do tourists want to be on the train that long?
- NIMBY question.
- Rail exists, no construction. Tearing up rail will mean construction vehicles.
- Why would an eagle want to live where people are walking?



- Middletown people should discuss Middletown.
- About 2 miles inactive rail in Haddam.
- Tourist train usage could continue. Riders are different from cyclists, etc. Different tourism could occur from this alternative use of the area.
- Using entire line is VRR future potential. Steady progress for 40 years. As line expanded, so have the “products.” Money goes to communities other than Essex station area.
- Going to Middletown by train is a good thing. Middletown has restaurants. One of the only places with train and boat access.
- If rails pulled, do property rights of ROW revert to property owners? Rail banking...
- Some concern about crime at trailheads. Would prefer train in backyard as compared to 250 walkers.
- East Haddam rail station.
- Haddam has 50 miles of trails. Handicapped and elderly cannot use trails. Not accessible to everyone.
- Property values will rise with proximity to multiuse trail.
- Elderly could be accommodated on the trail.
- Look at Housatonic Study to see how they handled freight to rail conversion.

Name	Agency/Municipality	Email Address
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Lower Connecticut River Valley Council of Governments

Tourism-Passenger-Freight Rail Economic and
Structural Feasibility and Impacts Study



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01 Welcome & Introductions

05 Passenger Services

02 Study Overview

06 Freight Trends

03 Tourist Railroad

07 Issues Discussion

04 Multi-Use Recreational Trail

08 Next Steps

01

Welcome & Introductions

Study Team

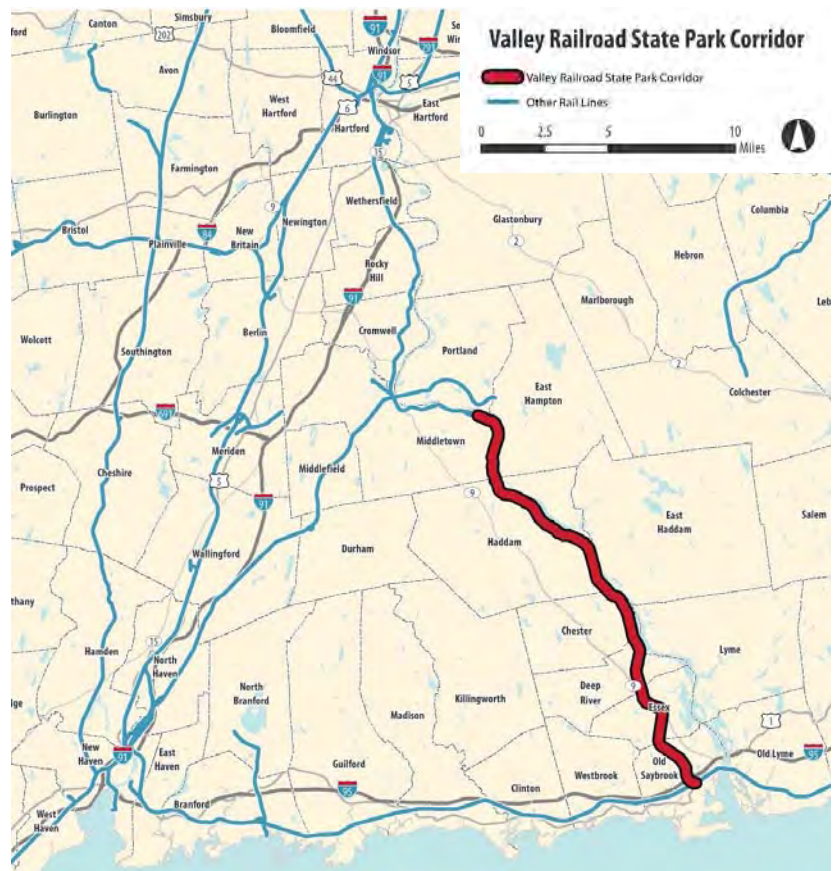
- Lower Connecticut River Valley Council of Governments (River COG)
 - Jean Davies
 - Jeremy DeCarli
- HDR
 - John Weston, Project Director
 - Pamela Yonkin, Economist
 - Ron O'Blenis, Rail Engineer
 - Stefanie McQueen, Planner



02 Study Overview

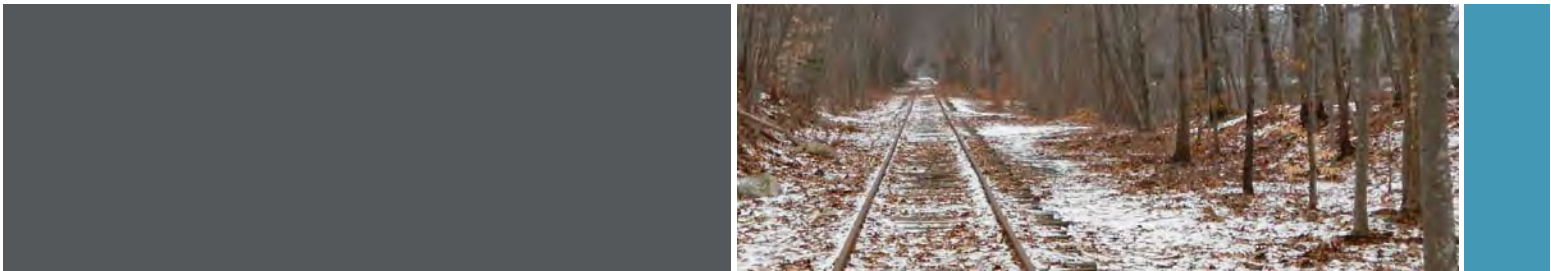
Study Purpose

- To develop information to support decisions regarding the future best use of the Valley Railroad Right-of-Way.
- Options under consideration include:
 - Enhancing support for tourist/excursion rail service
 - Expansion of public access
 - Expansion of rail operations
 - Conversion of right-of-way to all public use

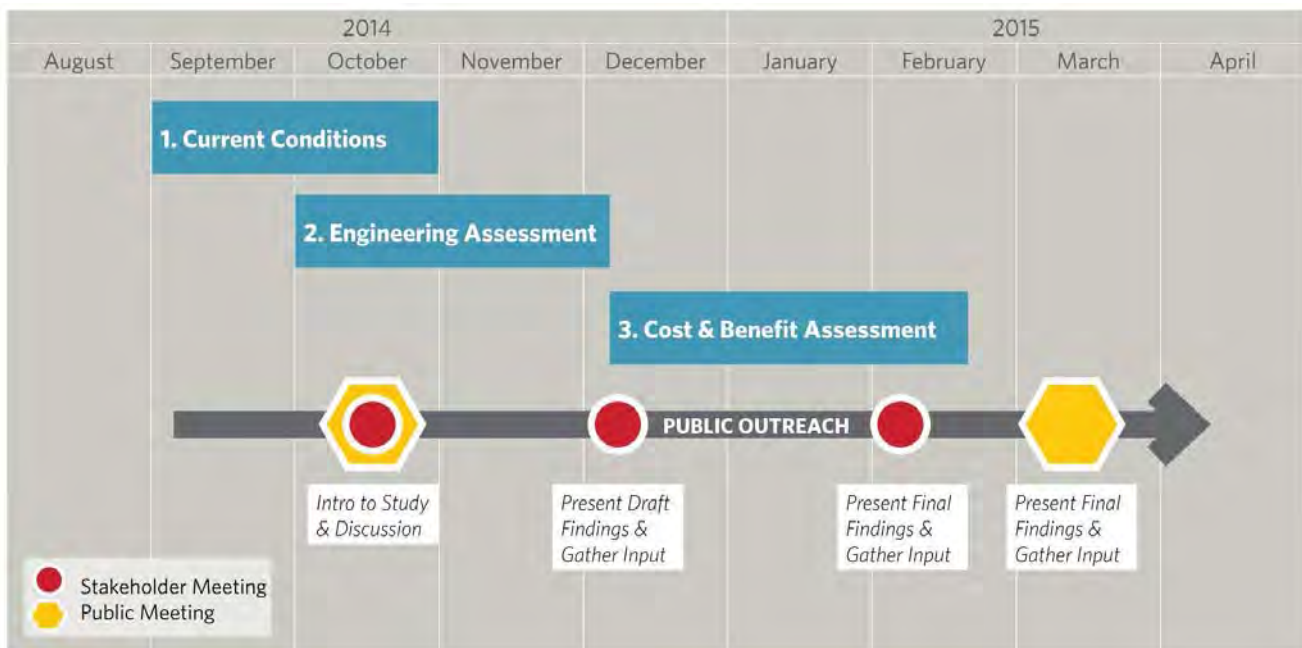


Study Background

- 1969 – State of Connecticut received ROW from Penn Central Railroad (Connecticut Valley Railroad State Park)
- 1971 – Valley Railroad Company granted 100-year lease to operate Essex Steam Train
- Relevant Studies/Plans
 - 2009 - Valley Railroad Company TIGER grant
 - 2011 – Rail Freight in the Housatonic Region study
 - 2012 - CT State Rail Plan
 - 2014 - Scenic Corridor Study



Study Process



Study Tasks

1. Current Conditions

- Identify existing freight rail market
- Identify potential future freight rail market
- Identify potential passenger rail market
- Review other studies

2. Engineering Assessment

- Review current conditions
- Assess needed improvements

3. Assess Costs and Benefits of Future Use

- Costs, including but not limited to:
 - » Business/property impacts
 - » Environmental impacts
 - » Land Use impacts
 - » Safety impacts
 - » Transportation impacts
- Benefits, including but not limited to:
 - » Business/property impacts
 - » Environmental impacts
 - » Land Use impacts
 - » Safety impacts
 - » Transportation impacts

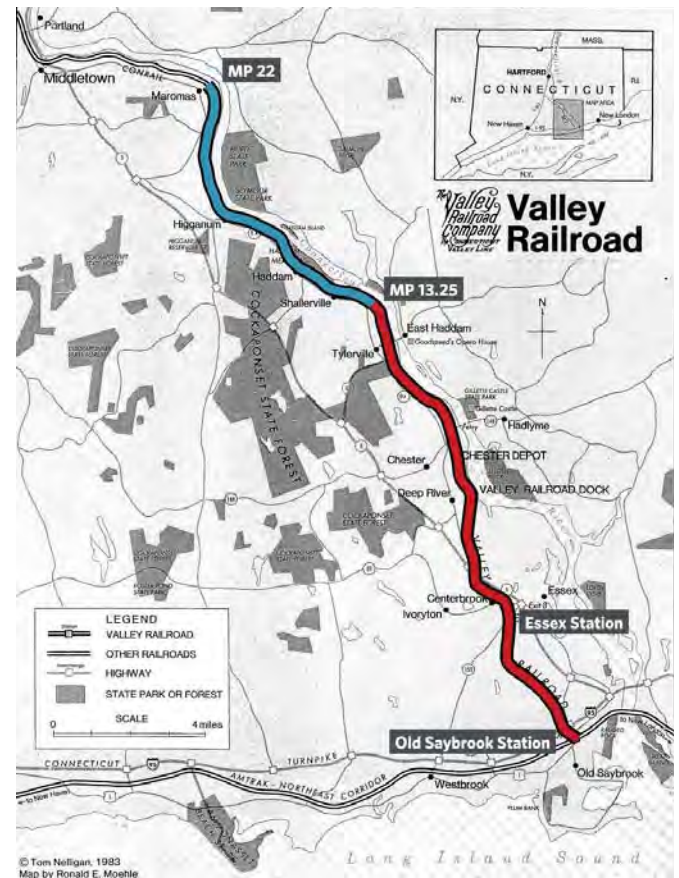


03

Tourist Railroad

Valley Railroad Company (VRR)

- Began tourist rail operations in 1971
- Long-term lease to operate on 22.5 miles of ROW
- ROW owned by the CT Department of Energy and Environmental Protection (CDEEP)
- Trains operate on southern 13 miles
 - Old Saybrook to Haddam
- Northern 9 miles are out of service, not abandoned
 - Haddam to Maromas
 - Maintained clear for maintenance of way equipment, vegetation control, and property surveillance



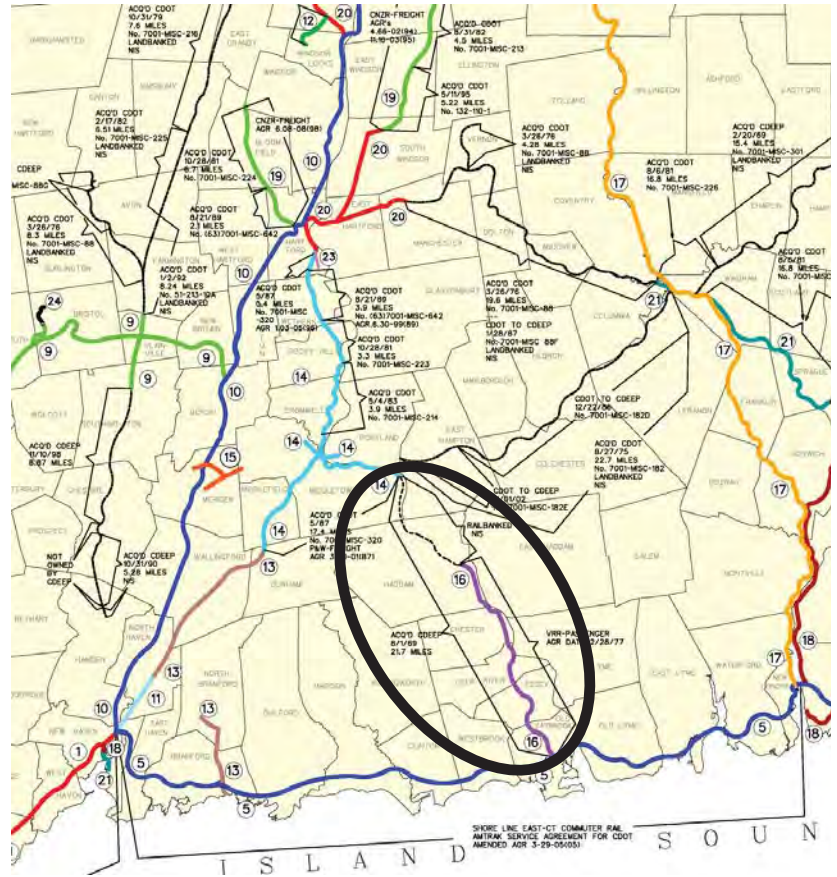
VRR Operations

- Seasonal Operations
 - May to December holidays
 - Typically run 5 to 40 round trips per day
 - Operates 3-7 days per week
 - Limited services winter & early spring
- 140,000 annual visitors
- 50% of visitors from out-of-state



VRR Information from State Rail Plan

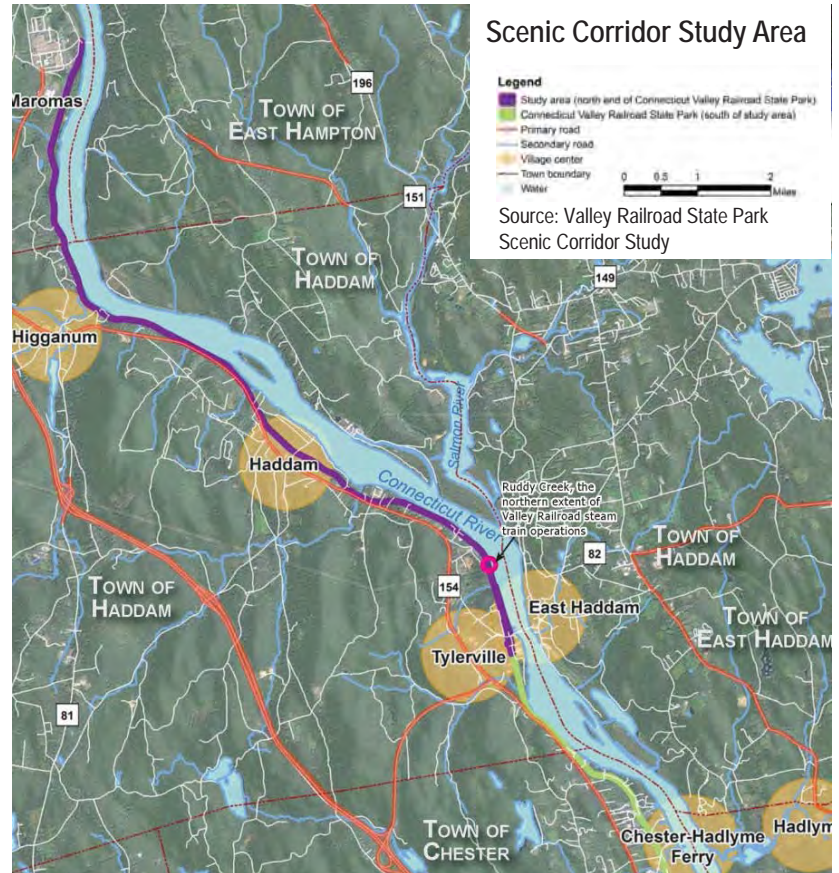
- VRR is a common carrier operator
- Freight connections to national system
- Line maintained for FRA Class
 - Class 1 from Old Saybrook to Essex
 - Class 2 from Essex to Chester
 - Class 1 from North Chester to Middletown
- Grade Crossings
 - 14 public , 12 with active warning devices
 - Most in good condition
 - Private grade crossings



04 Multi-Use Recreational Trail

Valley Railroad State Park Scenic Corridor Study

- Completed May 2014
- No recommendations
- Conceptual designs & guidelines for a multi-purpose trail on unused segment
 - Informal trail along the corridor (no action)
 - Multi-use trail in place of rail
 - Multi-use trail in addition to rail development
- Evaluated environmental constraints
- Links to other destinations

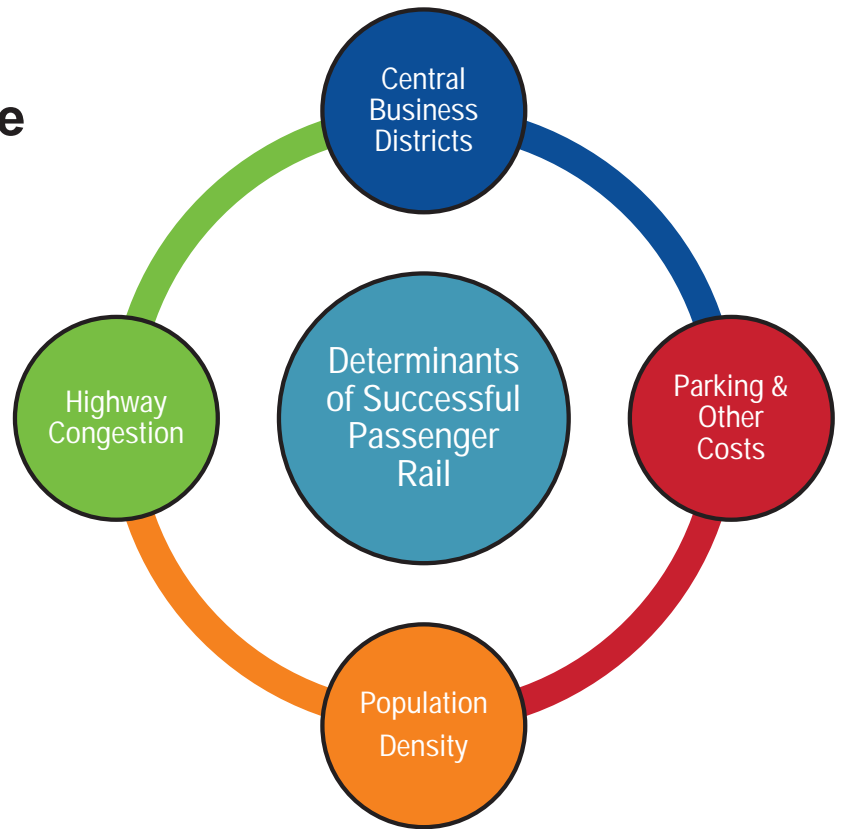


05

Passenger Services

Types of Passenger Service

- Intercity Passenger Rail
 - Connects longer distances, larger markets
 - Typically non-daily, non-commute travel
- Commuter Rail
 - Focus on regional daily travel patterns
 - Requires targeted group of users
 - Needs density to support frequent daily service
- Tourist / Excursion
 - Longer distance/bus combination potential



06

Freight Trends

East Coast Freight Trends

- Economy is improving
- Roadway congestion is increasing
- Shortage of truck drivers
- Panama Canal widening
 - Limited impact on New England freight transportation system
- Major rail facilities in NY & MA



CT Freight Flow All Modes

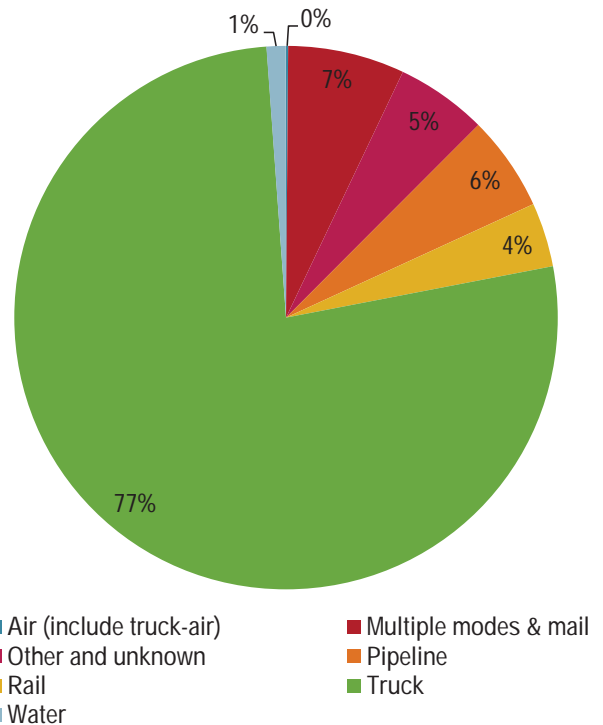
- Freight flows by weight
 - CT → MA NY → CT
- Top 10 freight commodities by weight
 1. Base metals
 2. Basic chemicals
 3. Mixed freight
 4. Coal-n.e.c.
 5. Other foodstuffs
 6. Newsprint/paper
 7. Coal
 8. Nonmetal min. prods.
 9. Cereal grains
 10. Gravel



Freight by Mode in CT based on Weight

CT Freight Modal Facts

- More than $\frac{3}{4}$ of all inbound and outbound CT freight is moved by truck – haul distance
- Rail accounts for 4% of all tonnage
- Other, multimodal and pipeline account for 18% of tonnage shipped into and out of CT
- Water accounts for 1% of all tonnage
- Intrastate movements also show high amounts of bulk material – heavy freight
- ConnDOT has a goal articulated in the Connecticut State Rail Plan of 2010 to increase rail freight usage by 25%



07

Issues Discussion

Discussion of Future Options



Tourist Railroad



Multi-Use Trail



Passenger Services



Freight Rail

08

Next Steps

Next Steps

- Finalize Current & Future Economic Conditions Assessment
- Complete Engineering Assessment of the Rail Line
- Prepare Preliminary Findings
 - Present to Stakeholder Group (Dec. 2014)
- Conduct a Cost-Benefit Assessment
 - Present to Stakeholder Group (Feb. 2015)
 - Present to Public (March 2015)

Name	Agency/Municipality	Email Address
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Stakeholder and Public Meeting Summary

January 22, 2015

Essex Town Hall

29 West Avenue, Essex, CT

To assist in the development of the Valley Railroad State Park Tourism-Passenger Rail-Freight Rail Economic and Structural Feasibility and Impacts Study (Rail Corridor Study), public involvement will be essential to help the study team identify major issues, review study findings, and provide input throughout the study process. As part of a larger study process to evaluate the future the Valley Railroad State Park, the Lower Connecticut River Valley Council of Governments (River COG) has engaged HDR to evaluate the feasibility and cost-benefit of other uses for the corridor. The study is evaluating the relative benefits of the corridor within the regional and statewide freight and passenger transportation network.

The study team will meet throughout the study process with both a stakeholder group and the public. The stakeholder group includes representatives from railroad companies, the Connecticut Department of Energy and Environmental Protection (CT DEEP), Connecticut Department of Transportation (CT DOT), Middlesex Chamber of Commerce, local civic groups, and interested neighboring property owners.

The second stakeholder meeting and public meeting were held separately on January 20, 2015 at the Essex Town Hall located at 29 West Avenue, Essex, Connecticut. The stakeholder meeting was held at 4:00 to 5:30 PM. The public meeting followed at 6:00 to 7:30 PM. At both meetings, HDR prepared a presentation that reviewed the preliminary findings on the market and viability for passenger and freight rail on the corridor. Results from an infrastructure analysis was also reviewed. Meeting participants were invited to share their comments and ask questions throughout the meeting. A summary of the presentation and questions and comments received is provided for each meeting.

Stakeholder Meeting Summary

The stakeholder meeting began at 4:00 pm with an introduction by Jeremy DeCarli, Jean Davies, and Sam Gold from the River COG. John Weston with HDR began the presentation with a review of the work completed to date. Mr. Weston told the group that the purpose of today's meeting is to review the conditions assessment of the infrastructure and the results of the market assessment for passenger and freight rail uses. He emphasized that he would be presenting context, and not really conclusions at this time.

John Weston described the infrastructure assessment that was completed in the fall. He described how the study team walked the corridor, met with the Valley Railroad Company, and held other stakeholder interviews. He then provided an overview of the history of the railroad corridor and its ownership and approved uses. He stated that the rail corridor is owned by CTDEEP for scenic rail and is operated by the Valley Railroad Company with a long-term lease.



The rail corridor must stay in its current use, or go through a federal process to alter the use. The Valley Railroad Company has the right to operate freight on the corridor, but has not chosen to exercise that right.

Mr. Weston then described how the corridor was split into four segments to describe the existing conditions. Each segment has a different Federal Railroad Administration (FRA) maintenance class, and there are some discontinuities on the northernmost segment. As part of the infrastructure assessment, two different scenarios were prepared to provide cost-estimates for future use of the corridor. The first scenario looked at the addition of freight service on the entire length of the corridor. The cost to upgrade the rail line for this scenario is \$30 million. The other scenario is the expansion of tourist rail onto the northernmost segment (9 miles). The cost for this scenario is estimated at \$5.3 million.

John Weston stated that the cost to upgrade the infrastructure along the right-of-way to support passenger rail service is the same as the first scenario to upgrade for freight rail service. In addition to the \$30 million for right-of-way improvements additional funding to support the development of a layover facility, accessible platforms, and signal systems would be required to support passenger service.

The discussion then turned to the potential for passenger rail service along the corridor. John Weston stated that the assumed destination for passenger service would be Hartford. He explained that typically, the standard for the size of a downtown destination that can support commuter rail service is 70 million square feet of commercial or office space. In comparison, Hartford has about 10 million square feet. Additionally, the residential density in the outlying origin areas is also required to support service. U.S. Census Bureau American Community Survey results show that in 2010 approximately 600 people in the five town area along the corridor currently work in Hartford. Due to both of these factors, it appears that there is not a market for passenger services and that it would be hard to support. While it could be done, service would require a subsidy. In the future, a change in parking costs in Hartford, rising gas prices, and additional development in Hartford could result in different conditions that may make service more viable.

Pam Yonkin from HDR then reviewed the freight rail assessment of the corridor. She explained that the information she would be presenting is at the state, regional, and local levels. She reviewed the data collection process and the limits to the data.

Ms. Yonkin explained that at the state level, trucking is the preferred method for freight and that most companies rely on a “just-in-time delivery” system that results in smaller and more frequent deliveries. Connecticut is primarily a “through” state and is in close proximity to large facilities/warehouses. Ms. Yonkin reviewed the top trading partners for the state and the top commodities, including those that could be potentially shipped by rail. Currently, less than 4% of freight tonnage in Connecticut is shipped by rail.

A stakeholder asked for clarification on the mixed freight classification. Ms. Yonkin replied that it is a combination of more than one commodity category. Another stakeholder asked if the study team looked at petroleum or oil. Ms. Yonkin replied that according to FAF data it was not a top ten commodity.



Ms. Yonkin then reviewed the regional findings. She explained that Hartford is a service-based economy, and that freight tied to those businesses is not really the type of freight that could be shipped by rail.

A stakeholder inquired if the study team has looked at the Port of New London to see what is coming in and out? Ms. Yonkin replied that it is hard to get specific data from the Port, but she understands one of the primary commodities is wood pellets.

Ms. Yonkin then reviewed findings for the rail corridor study area. She stated that it is hard to get data, but that interviews were conducted with businesses along the corridor and results from several other studies were consulted. In general, she explained that existing businesses along the corridor were small manufacturers that would find it difficult to use freight rail. Some businesses, primarily waste and scrap metal establishments, expressed some interest in rail. She concluded by stating that currently, there is limited freight rail viability, the preference now is for the continued use of trucks. She explained that changes in freight rail demand may occur in the future due to increased passenger rail service on existing rail corridors (i.e., Northeast Corridor) or increased congestion on roadways. These types of changes may force freight rail users to find other rail lines or businesses that rely on trucking to switch to rail. However, it does not look likely that the market would change in the near future.

The study team then opened the meeting to questions or comments. Questions and responses are provided below:

- *Could the study include interviews with existing businesses and then survey the towns for economic development potential based on what they have heard from potential businesses?* Yes, additional calls to town's economic development personnel will be made.
- *It is important that market data is factual. It appears that rail is more profitable for long haul than short haul trips. Need to confirm that market data is not skewed with wishes and desires.* Data sources will be clear in report.
- *Do you plan on conducting interviews with town officials?* Yes, we could set up meetings with Board of Selectmen or town economic development representatives.
- *Every town is required to do a plan of conservation and development, and update every 10 years. Is the study team planning on reviewing those plans regarding the future development of the corridor?* Yes, study team will review.
- *Why does the list of top commodities not include natural gas or other fuels (oil) given that these are the primary power sources in Connecticut?* These are surpassed by top commodities coal and coal not elsewhere classified (fire logs, coal for home use). Also, the data includes all trips, not by individual loads (coal trip 1, coal trip 2).
- *These figures are for commodities coming in and going out, not through the state?* Yes, that's true. In Connecticut, natural gas is moved by a pipeline. Also, if too few companies move a type of commodity, the data sources won't disclose data due to confidentiality concerns.



- *Have you looked at the trends for the top commodities (i.e., coal, fuel sources)?* We can look at how the top commodities are projected to change from 2012 to 2040.
- *The Providence and Worcester Railroad (P&W) operates along the Northeast Corridor between Old Saybrook, New Haven and Hartford. What does P&W move?* As noted, limited number of goods have a destination in the study corridor and most traffic would be through movements. Among other things, P&W moves stone for Tilcon in Middletown. Annually, 400,000 tons are taken out of this quarry. This is mentioned because stone is most often moved by rail.
- *What is the cost differential for shipping on Northeast Corridor versus the study corridor; has this analysis been completed?* No, route cost differentials will be speed, labor, conflicts with Amtrak
- *Will we have a detailed analysis of Tilcon and P&W?* We have spoken with both and do not anticipate getting any more data. We know that they ship rocks and that there is a potential market for scrap, metal, and debris.
- *Are the tracks viable for freight without improvements?* No, one or two trips would be possible but improvements or maintenance would immediately be required. Capital improvements would allow the same level of maintenance.
- *Even over the bridges?* Not likely, a detailed structural analysis is required, but minimum improvements would be needed.
- *Will you review the upcoming governor's report on transportation and proposed changes?* Yes, context is important, but our cost-benefit is for the corridor area.
- *What is the impact of Route 11 opening on the corridor?* We will look into how this may impact the market, costs or benefits to the Valley rail corridor.
- *Can you confirm that the funding from LWCF grant is for scenic railroad on the 22.5 mile corridor?* Yes, two parcels were acquired: the 415 acre parcel is for outdoor recreation, (hiking and fishing, etc.) and the 300 acre corridor if for scenic railroad, if possible. In this context, scenic railroad has been considered outdoor recreation.
- *In the LWCF grant, freight uses were probably not envisioned for the corridor. What would conversion cost? Do the capital costs include this cost?* This cost estimate would be done as part of cost benefit, but it is primarily a legal issue. Most scenic railroads operate freight or operate on a freight railroad line. The Valley Railroad is unique that it does not do this. It is a top five scenic railroad in the country. It is very impressive that they can support itself without freight. The addition of freight may not trigger conversion if the scenic railroad remains. The complete loss of the scenic railroad would trigger conversion. Regardless, implementing freight operation would increase costs to Valley Railroad Company due to increased regulation and maintenance costs.
- *Have you been in contact with NPS?* Not directly, but we do have numerous documents from them that discuss status of the line.
- *Will you be assessing economic benefit of trails? Also, will you look at property value depreciation if freight service started?* A University of Connecticut study is underway that



is evaluating the economic analysis of non-market assets. For this planning study, it is hard to define all the potential alternatives and complete a cost-benefit analysis for all of them. We will really focus our efforts on creating a list of qualitative potential benefits.

- *If the tracks are improved for freight service, would the cost for passenger service go down?* No, the layover facility, stations, and signals were separate costs in addition to the \$30 million track improvement costs that would be the same for freight and passenger rail.
- *How do you measure benefits in terms of the loss of informal trail use?* This is hard to measure since we don't know the number of current users. This could be analyzed if the decision is to convert to a trail use.

The meeting concluded with a review of the study's next steps. At the next stakeholder meeting in February 2015, the results from the cost-benefit assessment will be reviewed with the group. A public meeting will follow in March 2015.

Public Meeting Summary

The public meeting began at 6:00 pm with an introduction by Jean Davies and Jeremy DeCarli from the River COG. Ms. Davies reviewed the work from the recently completed trail study and gave an overview of why this study is being completed. She stated that this study is being completed on the freight and passenger rail feasibility to provide local officials with objective information. The purpose of this study is to answer many questions and develop a cost-benefit analysis to help the River COG board in future decision-making. The board is looking for the best economic option for the corridor, not necessarily the most profitable, but the most beneficial for the people of the region.

John Weston with HDR began the presentation with a review of the work completed to date. He continued with the review of the infrastructure assessment and passenger service assessment. Pam Yonkin presented the freight service assessment. The study team then opened the meeting to questions or comments. Questions and responses are provided below:

- *Do the infrastructure costs cover improvements to the entire corridor?* Yes.
- *Will this study include an environmental assessment?* This study is primarily a planning study that provides a cost-benefit analysis of potential uses. While it is primarily capital cost driven, it will take into consideration environmental costs. The next step after this study may be a complete environmental assessment.
- *Do the costs include the extension of the scenic railroad to Middletown?* No, just the northern most nine miles of the 22.5 mile corridor (between Maromas and the East Haddam swing bridge). In the freight scenario, the cost for the northern nine-mile segment is \$14 million, and cost for the rest of the corridor is \$16 million.
- *When does a tourist train become classified as a passenger train?* It depends, but it is usually a federal designation. In general, a passenger train has the primary purpose of carrying people to/from work. Passenger trains usually have higher standards for accessibility and safety requirements. It is not a clear line or distinction between the two.



- *The employment projections for the area do not include Lyme or East Haddam.* Yes, these other communities were not included, but they do not have high employment in Hartford. The addition of these towns would not make the ridership potential high enough to support passenger services.
- *Was light rail assessed?* For light rail to occur, the Valley Railroad service would have to cease and a new light rail line would have to be added all the way up to Hartford.
- *The rail corridor could be converted to a trail use, which would allow rail banking for future rail use.* Yes. The recent Supreme Court case may impact rail banking (deeds).
- *Regarding the cost-benefit process, will you factor in increases to truck shipping costs and the need to expand highways?* We understand the importance of this, but for this study we have to narrow study impact area and can not include this type of analysis.
- *Are there other small railroad lines like this?* Yes there are several short lines like this. While many lines are Class I railroads (typically east-west, coast to coast) that serve as alternatives to the Panama Canal, several short lines exist to serve more local customers. These short lines operate short distances to provide access for limited number of customers, but usually have one large client.
- *In this case, who would be the major client for freight service on this corridor?* P&W operates on the Northeast Corridor, and connects Hartford, New Haven, and Providence. This corridor would connect into the P&W system. Service on this corridor could assist in the reduction of congestion or competition with passenger service on the Northeast Corridor.
- *What was this corridor originally built for?* It was constructed for passenger rail between Hartford and Saybrook. A ferry in Saybrook then took travelers to New York City. Later, freight service was added to the corridor.
- *Port of New London freight moves north into Massachusetts, rather than west into Connecticut and then north.* This is true. Freight rail traffic from New London generally, does not use corridor between New Haven and Hartford unless it is serving a customer in these areas. It's not a through corridor. Typically, freight rail depends on cost not speed of service.
- *What about using river to ship?* The general rule regarding freight is that each time you touch a shipment, it costs more money. The cost to ship to the river, load, ship via river, and then unload somewhere would likely make this cost prohibitive.
- *What about businesses on corridor? Who would be likely users?* We've seen in our discussions that there is limited interest. Area businesses ship in smaller quantities. The primary interest was from businesses that deal in scrap metals or waste materials.
- *Why would Tilcon use the Valley Railroad line?* They have not expressed interest, but they are used as an example customer since they are the type of user that would use rail given the type of materials they ship.



- *Will this study look at creating a trail?* Another recent study by the River COG looked at details. This study will look at the benefits to the trail, including property value impacts. Will likely need a full alternatives analysis to evaluate the benefits of a trail.
- *Blackstone River Greenway in Rhode Island is a trail next to a rail corridor. Why have we been told that it's impossible here? Why is it fine to not separate roadway traffic and sidewalks/bike paths?* It is possible given the right of way width, but safety is primary concern for it to be possible. Rail cars would typically have to move less than 15mph and there would need to be some type of separation or fencing. For this study, we are really looking at the economic benefits, not the safety concerns. The recently completed trail study looks at this possibility in more detail, this study is provided at www.rivercog.org/Rail.html.
- *Although the study is not finished, it doesn't look like freight or passenger rail has any market. Why are you finishing the study?* Yes, this is true, however, this is based on the market as it exists today. While there is currently limited potential, this study will provide cost/benefit for future changes that may occur.
- *Have you looked at benefits of rail to trail?* For this study, we are going to define a limited number of alternatives. Right now, it looks like we will analyze the addition of freight service today, freight service in a future year, and some alternative uses of the corridor.
- *What market conditions will you look at?* We will look at the possibility of Tilcon moving things differently. We also know that Tilcon uses a rail line to Branford, where they load onto barges at the coast.
- *What are the limits to this study? Are you looking at costs for a bike trail?* This study looks at costs for rail uses. The costs for the bike trail were already prepared in the previous study.

The public meeting concluded with a review of the study's next steps. A stakeholder meeting will be held in February 2015 to review the preliminary results from the cost-benefit assessment with local officials and organizations. That group will provide feedback, and the finalized results will be presented at a public meeting in March 2015. The public was asked for potential meeting location ideas, and the Deep River Auditorium was suggested or a location in Middletown.

The study will conclude in April 2015. Following that, the regional transportation plan will begin in the summer and will include a deeper analysis of the corridor and regional transportation issues.



Lower Connecticut River Valley Council of Governments

Tourism-Passenger-Freight Rail Economic and
Structural Feasibility and Impacts Study



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01 Welcome & Introductions

05 Freight Railroad Assessment

02 Study Update

06 Next Steps

03 Infrastructure Assessment

04 Passenger Railroad Assessment

01

Welcome & Introductions

Study Team

- Lower Connecticut River Valley Council of Governments (River COG)
 - Jean Davies
 - Jeremy DeCarli
- HDR
 - John Weston, Project Director
 - Pamela Yonkin, Economist
 - Stefanie McQueen, Planner

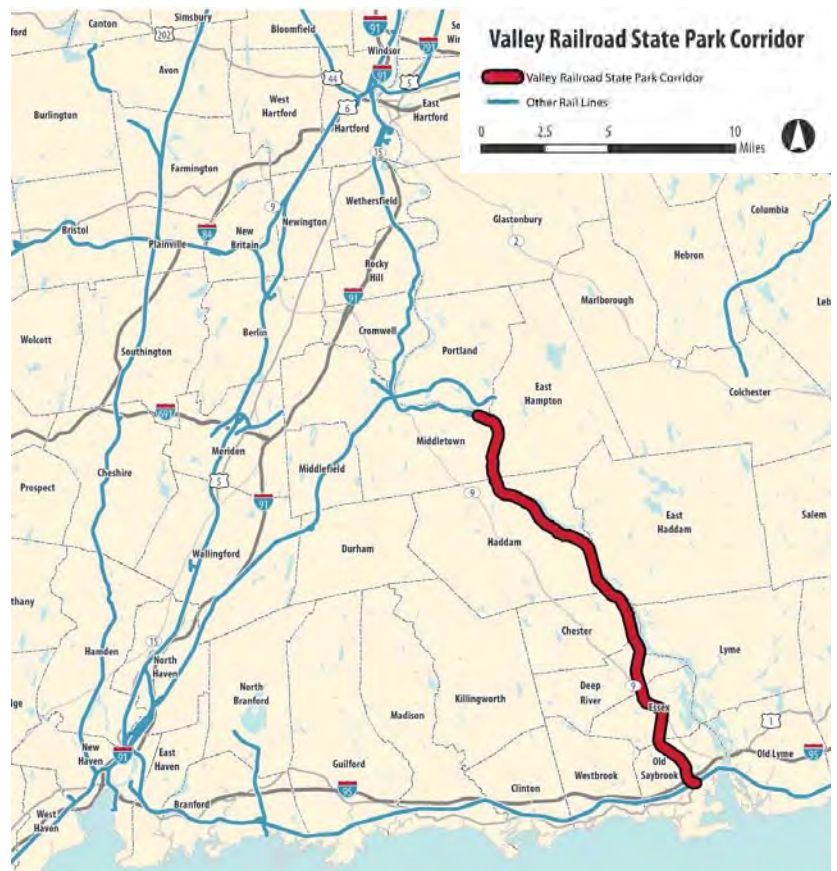


02 Study Update

Study Update

- Existing conditions assessment complete
- Interviews with key stakeholders held
- Infrastructure assessment complete
- Analysis of freight and passenger rail potential complete

- Identification of potential benefits of potential rail services underway

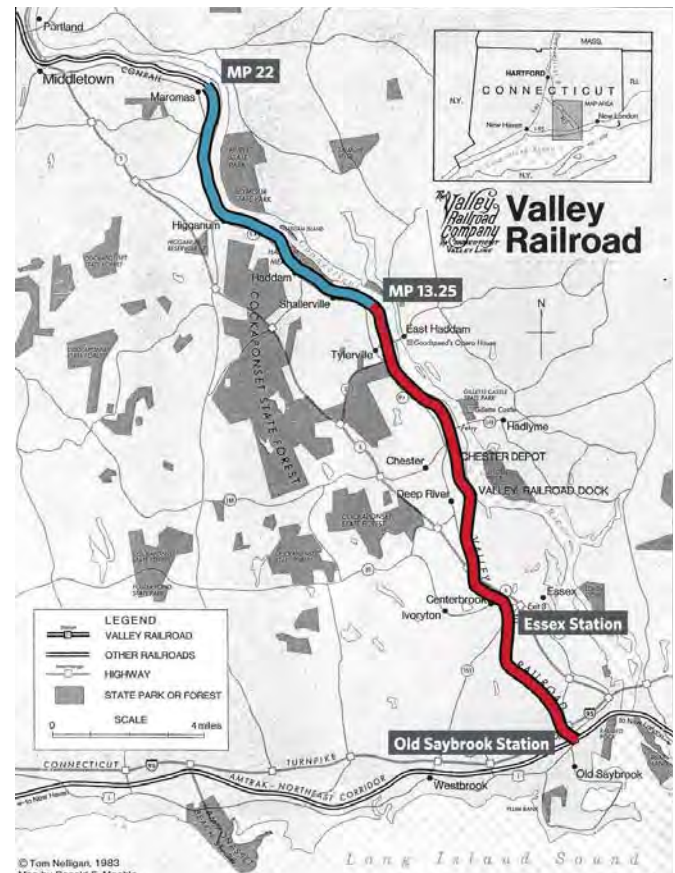




03 Infrastructure Assessment

VRR Background

- Analysis of existing conditions along the VRR completed
- Corridor owned by CTDEEP
- Operated and maintained by the VRR
- CTDEEP-owned portion of ROW connects Pratt and Whitney Manufacturing Facility in Middletown, CT with Amtrak's Northeast Corridor in Old Saybrook, CT
- Remaining 5.5 miles from the Pratt and Whitney Manufacturing Facility to Middletown Center is owned by CTDOT and operated by the Providence and Worcester Railroad (PWRR)



VRR Corridor Segments – Current Maintenance Level

Segment	Starting Mile Post (MP)	Ending Mile Post (MP)	Total Miles	Current Maintenance Level
1	0.0	4.0	4.0	FRA Class 1
2	4.0	12.3	8.3	FRA Class 2
3	12.3	12.9	0.6	Undergoing work to meet FRA Class 1 standards.
4	12.9	22.7	9.8	Active preservation for future use.

Maintained Segments

- Entire corridor – vegetation managed
- Work on approximately 0.6 miles of track currently underway to restore section to FRA Class 1 conditions – primarily tie replacement MP 12.3-12.9.
- The remaining 9.8 miles is being preserved in a manner that would expedite future use
 - Volunteers complete brush cutting and minimal drainage work
 - Several discontinuities – washouts, encroachment, emergency bridge repairs
 - More engineering design required in this segment to upgrade it for freight use



Discontinuities

- Cut section at MP 14.41 has been filled in – preserves access to property formerly accessible by overhead bridge
- Portion of track has been covered inside a boatyard at MP 13.3
- Washout at MP 17.67



Infrastructure Assessment

- Order-of-magnitude cost estimate for rehabilitation and restoration of the line to FTA Class 2 freight service
 - Scenario 1: Includes requirements for upgrading the line for freight operations with continued tourist train operations
 - Due to ongoing efforts by VRR, the work scope for upgrades mostly limited to infrastructure improvements to meet current industry standards for freight operations
 - Scenario 2: Includes requirements for upgrades for tourist train operations along the whole corridor with no freight operations
- Engineering analysis of the PWRR section not conducted



Scenario #1

- Upgrades support a 286K lb. freight car
- Current AREMA standards followed
- To reduce O&M costs, higher-grade materials required
- Cost estimate assumes VRR has 2 freight movements/weekday – approx. 3.4 MGT of freight traffic/year
- Track upgrades will meet or exceed FRA Class 2 standards
- Installation of ties, replacement of defective joint bars, tightening of bolts along the line

Component	Cost
Structural (Bridge) Cost	\$2.5 million
Track Costs	\$22.0 million
Engineering & Construction Maintenance Costs	\$2.5 million
Contingency	\$3.0 million
Total	\$30.0 million

Scenario #2

- Lower demand placed on the track infrastructure in this scenario
- Efforts concentrated in MP 12.9-22.7 corridor segment
- Tie replacement rate of 1,280 ties per mile assumed because of generally poor tie condition
- Quantity will put the corridor in a FRA Class 3 tie-compliance level.

Component	Cost
Structural (Bridge) Cost	\$2.5 million
Track Costs	\$1.8 million
Engineering & Construction Maintenance Costs	\$0.5 million
Contingency	\$0.5 million
Total	\$5.3 million

Passenger Service Infrastructure

- Similar to improvements required for Scenario #1
 - Freight – weight driven
 - Passenger – speed driven
- Other capital improvements
 - Train layover/maintenance yard
 - Fully accessible train-platforms
 - Train signal system with positive train control.
- Additional equipment costs to operate passenger rail service
 - Likely to double or triple total cost
 - Dependent upon specific site conditions required for each improvement



04 Passenger Railroad Assessment

Approach – Indicator Method

- Studies key real estate, demographic, and transit habits as a means of determining potential ridership for a commuter rail line
 - Total square footage of office space in a downtown
 - Dwellings per acre
 - Other demographic information

Source: "Making Effective Fixed Guideway Transit Investments: Indicators of Success." Transit Research Board, January 2014.

Transit Vehicle Mode	Min. Downtown Size SF Contiguous Non-Res'l Floor Space (millions)	Min. Res'l Density Dwelling Units per Acre
Local Bus	2.5	4 to 15
Express Bus	7	3 to 15
Light Rail	21	9
Heavy Rail	50	12
Commuter Rail	70	1 to 2

Regional Context

- Hartford has 10 million sf feet of rentable office space – CBRE study
 - Government and institutional space contributes to overall office space totals, but including this space still falls short of 70 million sf
- Relatively small numbers of people commute from LCRVCOG communities to Hartford – 616 people in 2010

Source: American Community Survey

Out of Town Employment Locations	Chester Residents	Deep River Resident	Essex Residents	Haddam Residents	Old Saybrook Residents
Chester	N/A	311	76	177	28
Deep River	108	N/A	122	82	90
Essex	156	401	N/A	95	253
Haddam	0	27	0	N/A	40
Old Saybrook	90	238	502	23	N/A
Cromwell	26	13	33	122	11
Hartford	104	78	112	214	108
Middletown	279	114	69	843	213
Rocky Hill	0	19	25	90	36
Weathersfield	0	0	0	98	0
Total Corridor Employment	763	1,201	939	1,744	779

Passenger Rail Viability – Conclusion

- Not viable
 - Office market too small in Hartford
 - Limited number of commuters from LCRVCOG to Hartford
- What could change the assessment?
 - Subsidies
 - Hike in gas prices
 - Increased parking rates downtown
 - Changes in the densities in corridor communities
 - Linkages made on the New Haven-Hartford-Springfield line
 - New destinations
 - New and large employment centers



05 Freight Railroad Assessment

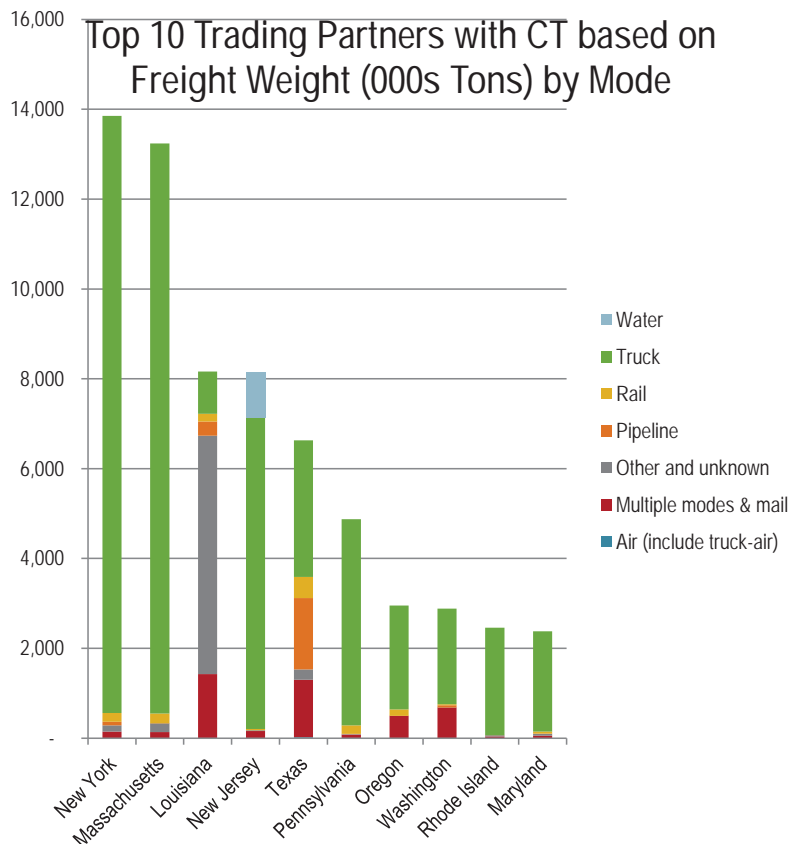
Approach

- Data analysis
- Review of previous studies
- Interviews with potential shippers and other stakeholders



State-Based Findings

- Preference in CT is to transport freight by truck
 - Consolidation and restructuring of freight transportation modes with shifts toward “just-in-time” delivery and containerization
 - CT is a relatively small geographic area located in close proximity to some of the nation’s largest cities, ports, intermodal rail facilities, and airports – tends to be part of the truck portions of intermodal freight trips

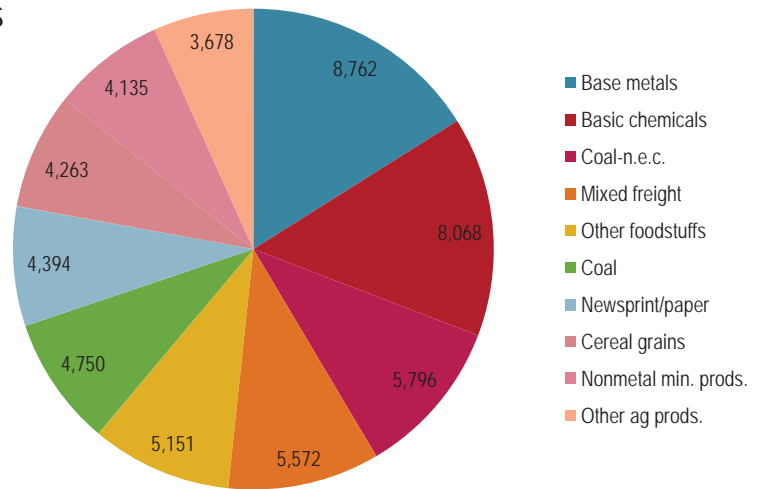


Source: FHWA Freight Analysis Framework, 2012

Top 10 Commodities Shipped into and out of CT based on Weight (000s)

State-Based Findings

- Many of the top commodities shipped by all modes could be shipped by rail
- Top trading partners for freight rail transportation: TX, IL, GA, MA, VT
 - Gravel top commodity for MA-CT freight rail tonnage
- 3.8% of total freight tonnage is shipped into and out of CT by rail – may be underrepresented due to data suppression
- Freight rail tonnage is expected to grow 36% by 2040
 - This growth is less aggressive than other modes
 - By 2040, it will represent 3.1% of total freight tonnage



Source: FHWA Freight Analysis Framework, 2012

Regional Findings

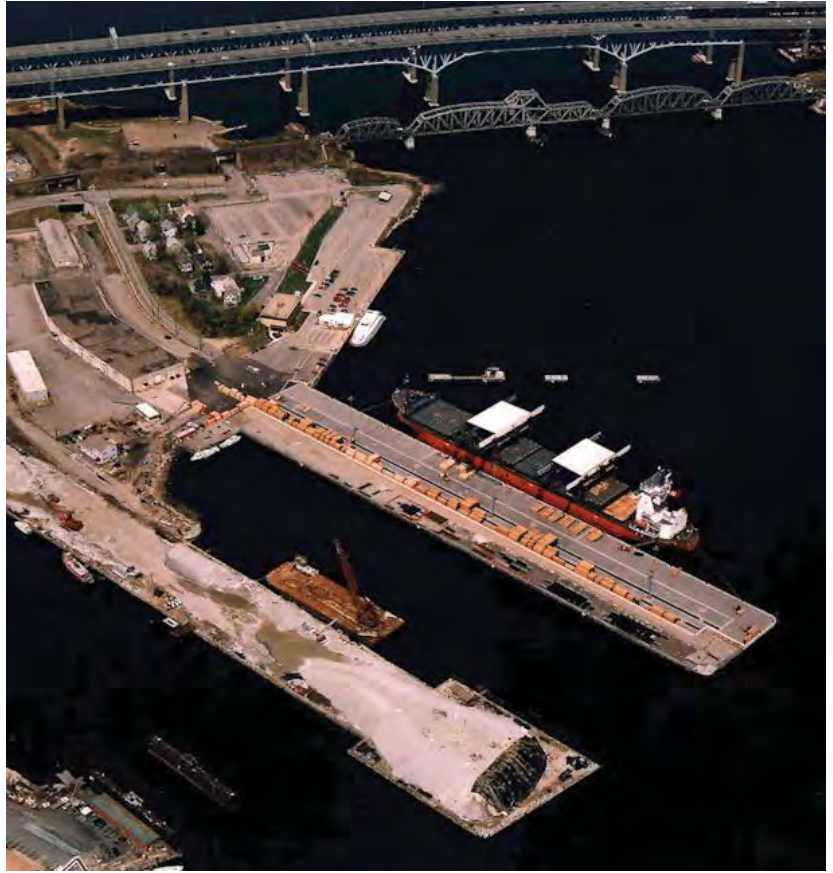
- Regional economy closely tied to major metropolitan markets – Boston, NY – where high volume corridors (for both truck and rail) exist
- Transportation is short-haul in nature
 - Favors shipment by truck over other modes
 - Efficiencies or potential cost savings of other modes do not outweigh flexibility of trucking
- Hartford business demographics
 - More service and public administration employment
 - Most area shippers likely require multiple, frequent package and parcel deliveries
 - Rail service estimated to account for 2% of total tonnage moved into, out of and through the Hartford region

Source: "Freight Movement in the Hartford Metropolitan Area, A Regional Freight Market Overview," prepared for the Capitol Region Council of Governments, Central Connecticut Regional Planning Agency, & Midstate Regional Planning Agency,.

Other Regional Findings

- New Haven-Hartford-Springfield (NHHS)
 - Additional sidings/changed operations will result in improved flexibility for freight rail operators to better meet their customers' needs
 - Not anticipated to influence demand for service on the VRR
- Port of New London and Freight Rail Improvements
 - More or new freight may be handled in New London – construction industry could influence
 - Improvements in CT rail infrastructure (TIGER) in New London and state could impact freight rail system overall – better rail system could support need for more capacity

Source: Photo from ConnDOT, <http://www.ct.gov/dot/cwp/view.asp?A=1380&Q=259734>



Regional Findings

- Limited data available for VRR study area
- Tilcon operations could potentially shift to utilize upgraded VRR
 - Branford Steam Railroad (BSRR) hauls, when operating at capacity, about 6 million tons of crushed stone out of Tilcon-owned North Branford quarry
 - PWRR moves crushed stone out of Wallingford to Tilcon facilities/customers – approximately 400,000 tons of stone go to Danbury
 - Other operations could possibly be shifted to VRR if cost competitive with trucking
- Some businesses located along VRR would consider using freight rail if available – would depend on comparative trucking costs
 - Scrap steel, stainless steel, construction, and demolition debris
- Most businesses located along VRR manufacture small quantities or move time-sensitive products that are not conducive to rail transport

Freight Rail Viability – Conclusion

- Limited viability
 - Some businesses along VRR would be interested in freight rail option – no guarantees
- Preference in CT is to transport freight by truck
 - Consolidation and restructuring of freight transportation modes with shifts toward “just-in-time” delivery and containerization
 - CT is a relatively small geographic area located in close proximity to some of the nation’s largest cities, ports, intermodal rail facilities, and airports – tends to be part of the truck portions of intermodal freight trips

Source: FHWA Freight Analysis Framework, 2012



What could change the assessment?

- Market conditions change
- Passenger service on shared-use corridors increases and freight operations are limited or forced to move
- Continued congestion on main roadways, such as I-95 – may make rail a more feasible option for some shippers

Photo source: Justin Sullivan/Getty Images, <http://newyork.cbslocal.com/2014/06/04/connecticut-transportation-officials-consider-ideas-for-traffic-congestion-relief>





06 Next Steps

Next Steps

- Conduct a Cost-Benefit Assessment
 - Present to Stakeholder Group (Feb. 2015)
 - Present to Public (March 2015)

Sign-In Sheet

	Name	Agency/Municipality	Email Address
1	Susan Oehl	Complete Streets MDTN.	susietree@att.net
2	Gray Lamr	Mediscum	
3	Amy Hencir	WINDSOR	
4	Chris Greaves	Madison	BUGLUG19@AOL.COM
5	CAPT R. A. COX	ESSEX	CAPTABC@aol.com
6	A. CARLSON	EAST LYME	
7	Bert Armington	CHESTER	barington@snet.net
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9	Will Fountain	NANTIC	MW1134@gmail.com
10	Candi Fountain		
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12	Kathy Tim Heidrich	Chester	
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17	Richard Farndell	Centerbrook	Rick@germicproperties.com
18	Burt Broch	Middletown	
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22	Justin Weir	Deep River	Justin.Weir3@hotmail.com
23	Greg Larsen	Chester	
24	Marpe DeBald	Haddam	mdebold@juno.com
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Sign-In Sheet

	Name	Agency/Municipality	Email Address
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Third Public Meeting Summary - April 7, 2015

Russell Library
123 Broad Street, Middletown, CT

To assist in the development of the Valley Railroad State Park Tourism-Passenger Rail-Freight Rail Economic and Structural Feasibility and Impacts Study (Rail Corridor Study), public involvement will be essential to help the study team identify major issues, review study findings, and provide input throughout the study process. The study team will meet throughout the study process with both a stakeholder group and the public. The stakeholder group includes representatives from railroad companies, the Connecticut Department of Energy and Environmental Protection (CT DEEP), Connecticut Department of Transportation (CT DOT), Middlesex Chamber of Commerce, local civic groups, and interested neighboring property owners.

The third public meeting was held on April 7, 2015 at the Russell Library located at 123 Broad Street, Middletown, CT. The public meeting was held between 6:00 and 7:30 PM. The purpose of the meeting was to provide a summary of work to date, review the findings that were completed as part of the draft Valley Railroad State Park Economic Feasibility Study report, and allow members of the public to provide comments on the study and draft report.

Public Meeting Summary

Jean Davies from River COG introduced the meeting and gave an overview of the Valley Railroad Economic Feasibility Study that began in fall 2014. She described the events that led to the initiation of the study, including the TIGER grant and the desire to further explore the future and potential uses of the corridor. She provided an overview of the COG, economic and transportation planning efforts in the region. She described the other studies that are related to the Economic Feasibility Study, including the recently completed Conway School Study that looked at trail uses and the ongoing study to look at tourism on the railroad.

Ms. Davies reviewed the purpose of the meeting and introduced the draft Feasibility report that is available on the River COG website (<http://www.rivercog.org/Rail.html>). She explained that public comments were still being accepted on the draft report. Comments will be incorporated into the final plan, which will be available prior to the COG board meeting in June 2015. She explained that the purpose of the report was to provide cost-benefit data for the COG board to make decisions, but would not include recommendations on a future use of the corridor.

Jeremy DeCarli from River COG explained the format of the meeting and asked members of the audience to wait until the end of the presentation to ask questions or make comments. He asked attendees to sign up with him to speak at the meeting and to send him any additional comments or questions on the draft report via email after the meeting. He explained that River COG would accept comments until May 15, 2015.



John Weston from HDR began the presentation by reviewing the previous efforts and work presented at the previous public meeting held in February 2015. He gave an overview of the project tasks and reviewed the study purpose. He reminded attendees that past presentations with findings were available on the project website. Some key findings included:

- The market for freight rail on the corridor is limited. Tilcon is the only existing user identified that may be interested in using the corridor for freight purposes.
- The market for passenger rail is also limited given the corridor demographics, roadway congestion, and parking costs and availability.
- An engineering assessment was completed that included a field investigation to identify needs for improvements. Two future use scenarios were considered to develop investment costs that would be needed for expansion of the tourist railroad or introduction of freight rail on the corridor.

Mr. Weston explained that no project has been defined yet and that this study is still in the conceptual phase. More detailed analysis, including an environmental assessment, would be completed as part of the federal NEPA process that would be required if a project were identified and developed.

Pam Yonkin from HDR reviewed the impacts (i.e., jobs, tax revenue) and the public benefits that were identified as part of the study. She explained that the economic impacts are calculated using the multiplier concept (i.e., for every \$1 spent, additional direct, indirect, and induced benefits occur). She reviewed the public benefits that are tied to transportation projects, including environmental (i.e., emission reductions), reduced maintenance (i.e., lower costs), and safety (i.e., accident reduction, fatality costs). She explained the difference between economic impacts and public benefits.

For this study, Ms. Yonkin explained that the benefits and impacts are based on the construction expenditures for the two scenarios (i.e., introduction of freight rail and expansion of tourism rail), the public benefits of a transportation project, and property value impacts. The property value impacts are still being determined, but will be available for review at the next meeting.

As part of the extension of the tourism rail scenario, Ms. Yonkin provided context on the existing economic benefit of the Essex Steam train, including a comparison with other tourism rail services. The existing service has 159,000 annual riders and provides an economic benefit of \$13.7-\$25.7 million annually. This includes direct, indirect, and induced benefits. She explained that a 10 percent growth in the existing service could result in an increased economic benefit of \$700,000-\$1.3 million.

For potential freight rail benefits, the cost-benefit analysis focused on transportation or public benefits, and not jobs. Local businesses were surveyed for interest in use of the corridor for freight rail to support their existing business. In general, freight rail benefits businesses that need to ship heavy loads over long distances. Based on the business survey, it appears that only two businesses in the area would be potential users of the corridor for freight rail purposes. Tilcon is an existing freight rail user, but if they used the corridor, it would actually result in a



longer route (of approximately 0.3 miles). Calamari Recycling currently ships their waste and recycling loads via truck and expressed an interest in switching to rail for some of their shipping needs. They are not currently rail accessible and would need to develop a rail spur to connect to the Valley Rail Line.

Ms. Yonkin explained that in order to calculate the public benefits for the freight rail scenario, operation assumptions were made for Tilcon and Calamari Recycling. The primary benefit identified was related to increased safety related to the switch from trucking to rail shipping. The total freight benefits were estimated at \$28 million, and the safety benefits were the largest part of the total benefit at \$22 million.

The property value impacts have not been fully quantified yet, but other reports and studies show that properties along rail corridors could experience a 4.8 percent reduction in value. In these other locations property value reductions are often offset at a community or county level by an increase in property values along highway corridors that have a reduction in truck traffic. Ms. Yonkin ended the presentation with a summary of the impacts and benefits presented and an explanation of the next steps, including the finalization of the report to incorporate public comments.

The study team opened the meeting to questions or comments. Questions and responses are provided below.

- *Question about the return on investment of freight rail. \$28 million cost with \$22 million benefit for safety. Valley Railroad is safer than other rail corridors. How many property owners are affected and how many driveways will be crossed? Questioned that assumption that a single user (Calamari) could cause \$22 million in safety costs (i.e., fatalities) per year. - The analysis is based on average impact related to rail and truck movements and not the specific details of a project along the corridor since a project has not been defined yet. More analysis/detail related to site specific impacts would be next in the development process. The safety costs are a national aggregate number, not Connecticut or local numbers.*
- *The potential user (Calamari) would generate 6.5 rail cars per week based on a \$30 million investment. What about if they traveled south on the Valley Rail line to the Northeast Corridor and paid Amtrak for use of that corridor instead of making improvements to the northern part of the Valley Rail line. Wouldn't the community still get benefits without all of the \$30 million investment costs? Questioned the safety of freight rail on the corridor, given the number of rail crossings, bridges, proximity with the Connecticut River. Has the risk of damage to the river been included as part of the analysis? - USDOT numbers were used for all of the economic benefits values. The suggested use of the southern part of the Valley Rail line and Northeast Corridor is a reasonable potential alternative. The costs associated with the risk are included but based on national numbers. Specific Connecticut or local costs are not included at this stage.*
- *Question about ton mile calculations. - Can show specifically how calculations were prepared after the meeting.*
- *Comment about Valley Railroad potential 10 percent growth and current revenue. - Assumption is based on a modest increase, specific information about Valley Railroad operations is not available. The team felt that it was reasonable that with an expansion of tourist service that Valley Railroad could provide additional trips during their busy season and new types of trips during the remainder of the year which collectively would generate a modest number of new riders.*



- *Safety rates are based on national numbers, but this is a shortline rail, which tends to have higher accident rates. Has this been accounted for in the numbers?* - Yes, it is accounted for in the benefits.
- *Question regarding the source for the numbers. Concern with the freight use on the corridor, loss of public access on the Connecticut River. Access to recreational uses is a positive societal benefit. Has this been included in the analysis?* - The ridership numbers were provided by Valley Railroad, which are the same values they report to the Federal Railroad Administration. Restricting recreational access to the exiting railroad corridor was not factored into the analysis.
- *Question regarding the completion of short haul trucking analysis. Route 9 does not currently have much freight trucks, how can there be a reduction in trucking as part of the benefit analysis?* - The analysis shows that there is no market for through-freight. Calamari is pretty much the only potential user identified for freight rail.
- *Comment about the need for local conditions, not just national or state level estimates. Analysis should include the specific number of grade crossings, risk to environmental setting.* - The report will be revised to outline the data limitations that result from not having a defined project and the need to have higher level conceptual analysis.
- *Comment regarding the lack of passenger rail market. Concern that the tone of the draft seems to downgrade negative impacts.* - That tone was not intended, but understood and will be reviewed as part of the final draft.
- *Comment regarding concern for environmental impacts, use of corridor for hazardous waste shipping. Concern with statistics presented in Section 2.3.2.* - Five year statistics are not the appropriate length of time to look at for this analysis, 20 years is more appropriate.
- *Comment about the report and lack of recommendations or conclusions.* - Purpose of report is to provide information to help local decision makers establish an economic strategy based on the economic feasibility of reuse of this corridor. Report should provide information to understand costs or benefits related to certain uses and not provide the case for one use in particular. While it may not state is outright, the report does indicate that tourism has a much higher benefit than freight rail.

The study team ended the meeting with information about the finalization of the study. The study team will continue to take comments until May 15, 2015, which will be incorporated into the final plan. The next meeting will be held in June with the River COG board.



Lower Connecticut River Valley Council of Governments

Tourism-Passenger-Freight Rail Economic and
Structural Feasibility and Impacts Study
April 7, 2015



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01 Welcome and Introductions

05 Freight Rail Benefits

02 Study Update

06 Other Impacts

03 Construction Impacts

07 Summary

04 Tourist Impacts



01

Welcome & Introductions

Study Team

- Lower Connecticut River Valley Council of Governments (River COG)
 - Jean Davies
 - Jeremy DeCarli
- HDR
 - John Weston, Project Director
 - Pamela Yonkin, Economist





02 Study Update

Study Tasks

1. Current Conditions
 - Identify existing freight rail market
 - Identify potential future freight rail market
 - Identify potential passenger rail market
 - Review other studies
2. Engineering Assessment
 - Review current conditions
 - Assess needed improvements
3. Assess Costs and Benefits of Future Use
 - » Business/property impacts
 - » Environmental impacts
 - » Land Use impacts
 - » Safety impacts
 - » Transportation impacts

Initial Study Tasks – Summary Results

1. Current Conditions

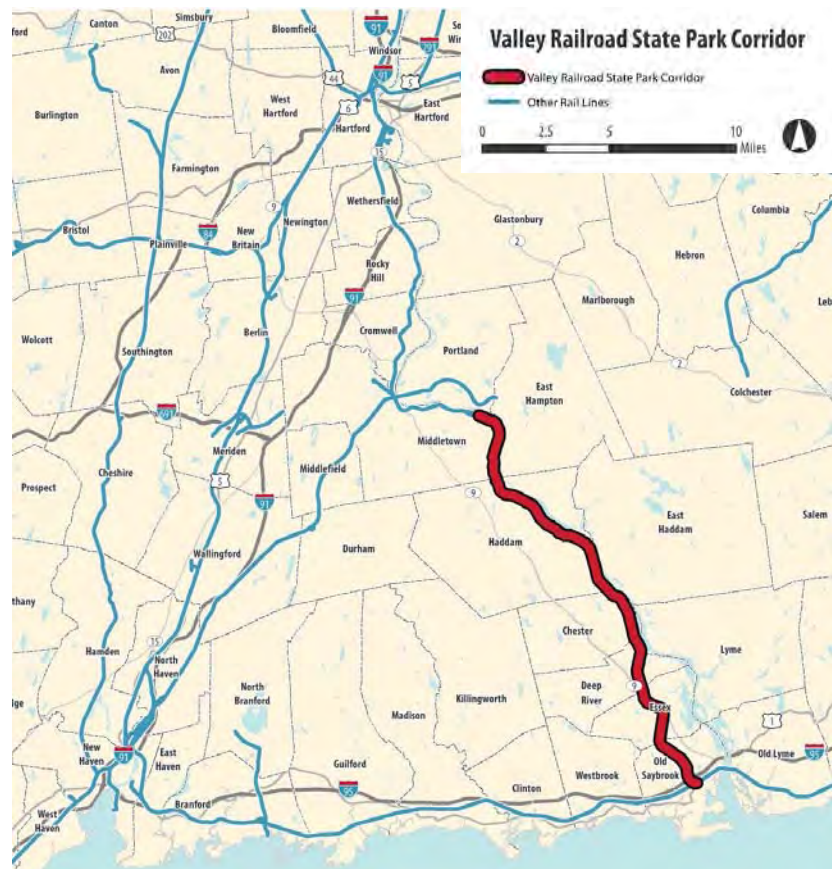
- Identify existing freight rail market – Existing freight rail market limited to Tilcon
- Identify potential future freight rail market – Potential for other freight rail customers along the corridor and if Shoreline Route (Old Saybrook to New Haven) becomes more congested
- Identify potential passenger rail market – Limited market

2. Engineering Assessment

- Review current conditions – conducted field inspection
- Assess needed improvements – Identified assumed improvements and associated costs for freight rail service and extended scenic rail services

Study Update

- Study purpose to provide information regarding economics (potential costs and benefits) of future use of the corridor
- Analysis based on improvement/service concepts
 - No commitments regarding service levels
 - No project specific details
- Any project moving forward would require additional detailed study



Impacts and Public Benefits

- Impacts
 - Expenditure-generated economic activity
 - Jobs
 - Output
 - Tax revenue
 - Property value

- Public Benefits
 - Transportation benefits to society generated by (primarily) public investment in infrastructure



Economic Impacts – Concept of Multiplication

Direct effects

- Changes in economic activity occurring as a direct consequence of decisions made by economic agents (e.g., project investment)

Indirect effects

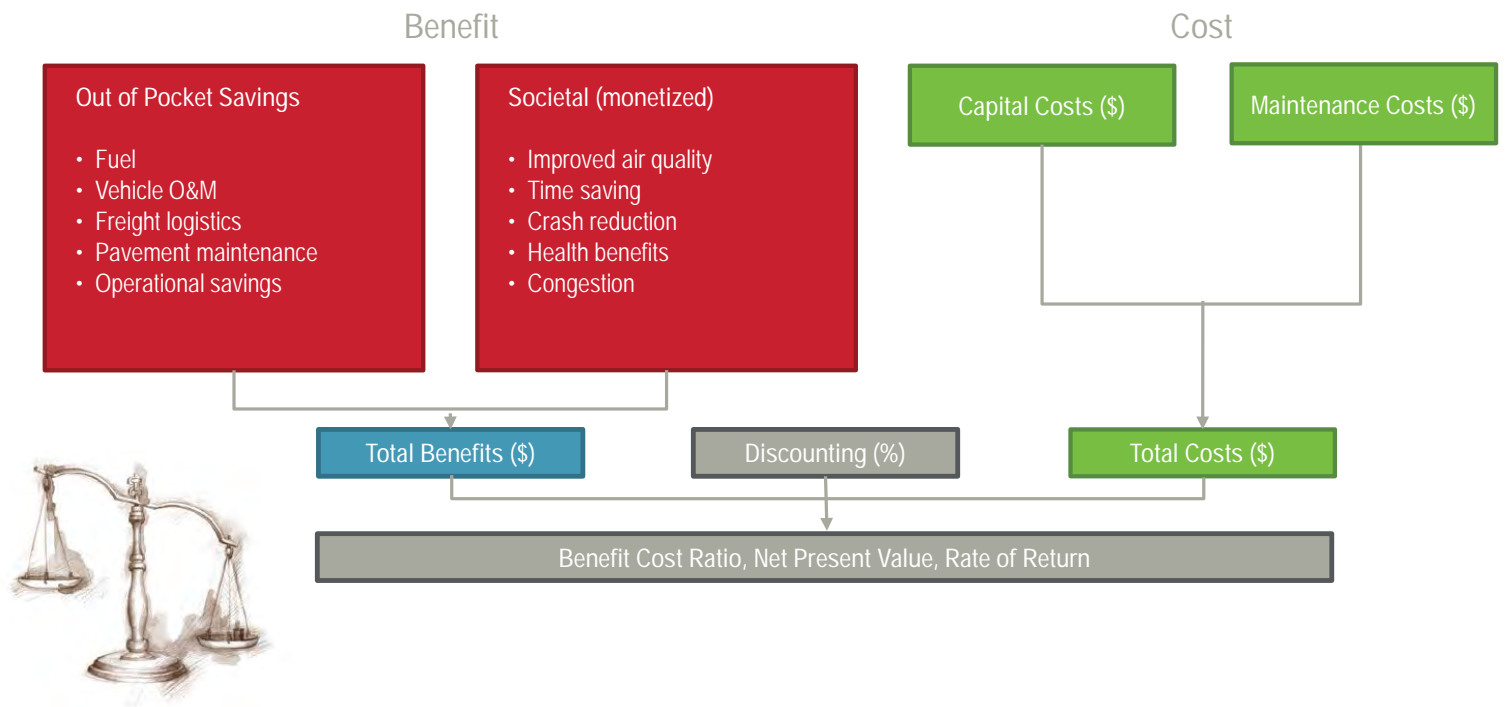
- Changes in economic activity resulting from suppliers to directly-affected businesses

Induced effects

- Changes in economic activity resulting from spending by workers of directly and indirectly affected businesses

*Driven by expenditures –
jobs, output, tax revenues*

Benefits and Cost Analysis – Transportation



Economic Impacts vs. Public Benefits

- Not an apples-to-apples comparison
- Both have value, but different metrics
 - Economic impact assessment considers the jobs, output and tax revenue potentially generated when government, business, and individuals spend money
 - Public benefits analysis considers benefits to society with investment
 - Does the project reduce traffic congestion?
 - Does the project reduce carbon and non-carbon emissions?
 - Will the project save people time?
 - Will fewer accidents occur because of the project?

Study Context

- No specific project identified during study
- Benefits and impacts based on:
 - Estimated construction expenditures for upgrading the existing ROW – no capital expenditures related to “tying businesses into” the railroad included
 - Economic impacts generated by construction expenditures and tourism activities
 - Public benefits based on real-world examples of businesses that would consider freight rail – not all inclusive
 - Property value impacts based on experiences of other communities



03

Construction Impacts

Upgrade Entire ROW to Support Freight Rail

- Upgrades support a 286K lb. freight car
- Current AREMA standards followed
- To reduce O&M costs, higher-grade materials required
- Track upgrades will meet or exceed FRA Class 2 standards
- Installation of ties, replacement of defective joint bars, tightening of bolts along the line

Component	Cost
Structural (Bridge) Cost	\$2.5 million
Track Costs	\$22.0 million
Engineering & Construction Maintenance Costs	\$2.5 million
Contingency	\$3.0 million
Total	\$30.0 million

Expand Existing Tourist Excursion Service

- Lower demand/stresses placed on the track infrastructure
- Improvements concentrated in MP 12.9-21.7 corridor segment
- Tie replacement rate of 1,280 ties per mile due to generally poor tie condition in the segment
- Quantity will put the corridor in a FRA Class 3 tie-compliance level.

Component	Cost
Structural (Bridge) Cost	\$2.5 million
Track Costs	\$1.8 million
Engineering & Construction Maintenance Costs	\$0.5 million
Contingency	\$0.5 million
Total	\$5.3 million

Impacts Associated with Construction

- Upgrade to freight rail
 - \$30 million investment in construction → 390 job-years
- Expansion of tourist excursion service to north
 - \$5.3 million investment in construction → 69 job years
- Likely jobs distribution
 - 68% in construction sector
 - 10% in manufacturing
 - 6% in retail trade



Note: one job-year is one job for one year



04 Tourist Impacts

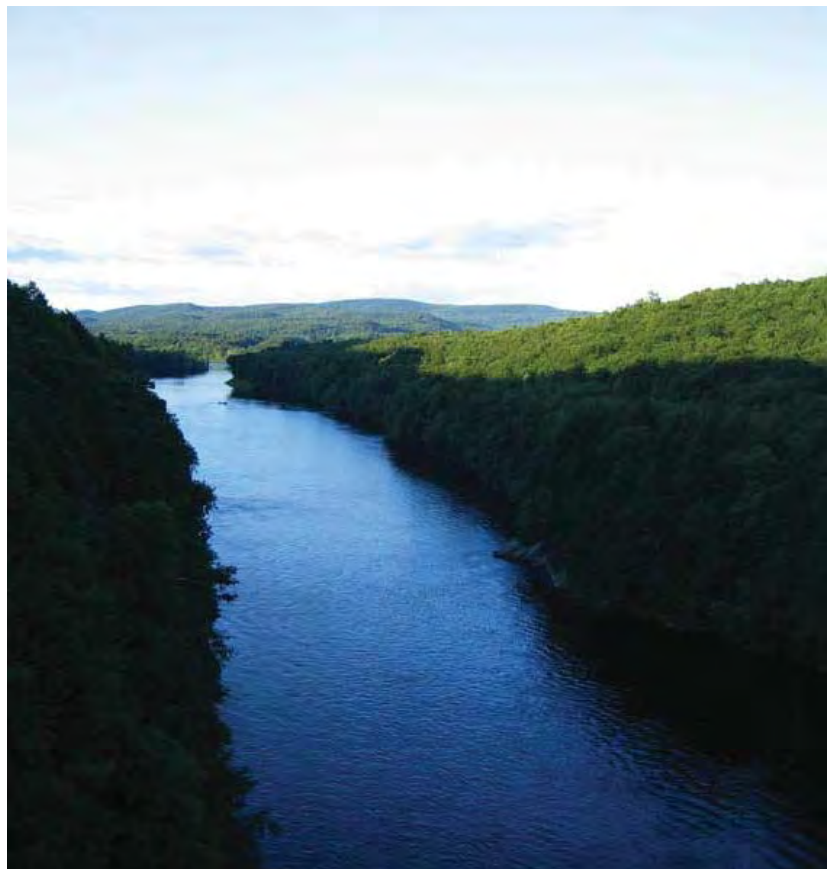
Impacts of Tourism in CT

- Tourism generates
 - \$1.2 billion in state and local revenues and 110,775 total jobs annually
- In 2011, CT state parks and forests generated
 - \$1 billion a year in revenues and 8,800 jobs
- CT park visitor party avg. size 3.5 people
 - \$175.24 per party, net accommodations → \$50.07/visitor
 - \$233.45 per party with accommodations → \$66.70/visitor
- Nonresident party avg. size 4.2 people
 - \$183.99 per party, net accommodations → \$43.81/visitor
 - \$230.34 per party with accommodations → \$54.84/visitor



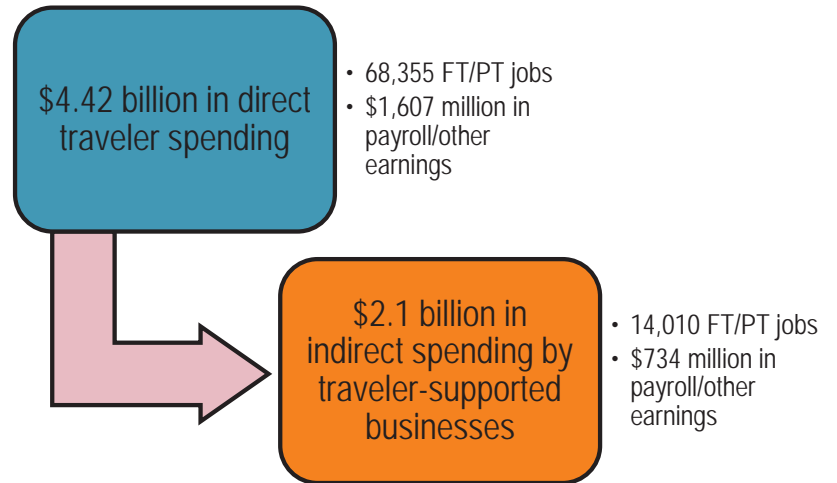
Impacts of Tourism – NH

- Plymouth State University conducts significant research related to:
 - Spending patterns of tourists to NH
 - Economic impacts generated by additional rounds of spending
- Focus of study is all of NH, which includes rural and more urban tourism
- New England focus of analyses
- Level of detail useful when considering general tourism activity in CT



Impacts of Tourism – NH

- Annual average spending per visitor day was \$82.23 in 2012
- For every \$1 invested in tourism activities, the state received a return of \$8.27; local government \$0.70.
- In FY2012 – for every \$1 spent, the typical NH tourist spent:
 - \$0.62 – Hospitality and leisure sector
 - \$0.26 – Retail stores (including food and gasoline purchases)
 - \$0.07 – Government services and licenses
 - Remainder on wholesale trade/transport sector, other services, agricultural products, educational and health care services



Tourist Rail Economic Impacts

- Adirondack Scenic Railroad
 - 50,000 annual riders
 - \$9.2 million in estimated economic impact
 - 225 total jobs generated
- Catskill Mountain Railroad
 - 14,823 annual riders
 - \$1.3 million in estimated economic impact
 - 20 total jobs generated



Essex Steam Train

- 159,030 train riders in 2014 – potential to expand
- Based on economic impact studies conducted by other excursion railroads:
 - \$13.7-\$25.7 million in estimated economic impact
 - 27 to hundreds of jobs potentially attributable to current VRR activity



Essex Steam Train

- Each additional rider may generate \$44-\$82 in direct spending per day
- Assuming 10% growth in ridership
 - \$700,000-\$1.3 million could be spent by visitors annually – much of which will go to local businesses in the:
 - Hospitality and leisure sector
 - Retail stores (including food and gasoline purchases)
 - Government services and licenses
- This spending could generate total economic impact of \$1.4-\$2.6 million





05

Freight Rail Benefits

Freight Rail Benefits

- \$60 billion industry, moves more freight than any other system in the world, 221,000 jobs
- In CT:
 - 8 freight railroads
 - 108 railroad employees
 - 364 miles of operating track
 - Average annual wage of \$63,900
- Freight rail public benefits, include reductions in:
 - Emissions
 - Safety
 - Pavement Maintenance
 - Roadway Congestion
 - Cost Savings to Local Shipping Operators



Freight Rail Use

- Several businesses already use rail
 - Tilcon
 - Calamari Recycling
 - Middletown Bulk Waste
- Some businesses located near the rail might consider but no existing need for freight rail service
- Other businesses are not suited for rail
 - Just-in-time logistics
 - Small- to medium-sized orders



Tilcon

- Tilcon is the dominant supplier of stone aggregate, concrete, and hot asphalt in CT
- 8 operating facilities currently accessible by rail
- Conversion of Valley RR would provide alternative route to connect quarry in Wallingford to facility in Old Saybrook
 - Current: trains run south from Wallingford on company-owned tracks to North Haven, connect to CSXT branch line, which then interchanges onto Amtrak Northeast Corridor, traveling 23 miles to Old Saybrook
 - Proposed: trains run 8.5 miles north from Wallingford to Middletown on existing Middletown Secondary tracks, then south on existing Laurel Branch for 5.5 miles to Mamoras, where they would then connect to the VRR to reach Old Saybrook. This trip would be 0.3 miles longer than the current route.

Calamari Recycling

- Calamari Recycling is a full service scrap metal recycling facility located in Essex, CT
- Site is positioned roughly 0.1 miles from VRR
- Key products: steel, construction and demolition debris
- Calamari currently operates its own truck fleet for shipping, but strongly believes converting the VRR for partial freight use would result in significant operating cost savings

Middletown Waste

- Some demand today
- Potential to consolidate regional waste
- 2,000-3,200 tons bulky waste per year, plus other materials

Freight Rail Benefits Assumptions

- Calamari Operations:
 - Average of 4,000 tons steel shipped per month
 - Primarily local (within state)
 - Average of 4,000 tons debris shipped per month
 - 70% to Ohio
- Tilcon Operations:
 - Assume operations will remain the same, with the exception of intra-facility shipments from Wallingford to Old Saybrook
- Middletown waste
 - No benefits quantified



Primary Benefits

- Significant difference between truck injuries and rail injuries rates
- Relatively large number of ton-miles that could be moved from roadways to rail if freight rail service was initiated, and based on our sample freight users
- Total accidents avoided by using rail over truck is significant.
- Total accidents/fatalities = safety rates * billion ton-miles by mode * CT share
- USDOT values:
 - Human life at \$9.3 million
 - Each injury at approximately \$108,000

Safety Rates per billion ton-miles

	Truck	Rail
Fatalities	4.351	5.814
Injuries	99.044	21.770

Freight Rail Benefits – Findings

- Emissions
- Safety
- Pavement Maintenance
- Roadway Congestion
- Cost Savings to Local Shipping Operators

Benefit Category	Connecticut Benefits
Emissions	\$3,549,304
Safety	\$22,441,582
Pavement Maintenance	\$13,858
Congestion Reduction	\$15,495
Shipper Cost Savings	\$2,476,744
Total Annual Benefits	\$28,496,983



06 Other Impacts

Property Value Impacts

- Owners of single family residences in Connecticut derived amenity values of \$270 million annually from overlooking DEEP managed venues
- Property taxes stemming from vistas dependent on DEEP managed venues added \$4.2 million to state revenues
- On the aggregate, decreasing property value as a result of increased freight rail traffic is largely offset by gains in property value for those properties that experienced a decrease in traffic
- The closer a property is to the tracks, the greater the negative impact on the property's value
 - In Northeast Ohio, residential properties close to freight rail lines saw a decline in property value of approximately 4-8% as freight service was re-routed throughout the region.
 - Properties that were impacted the most tended to be smaller
- Final report will include estimated property tax impacts



07 Summary

Summary

- Tourism Impacts
 - \$5.3 million investment in expanding tourist excursion service to north estimated to generate 69 job years
 - For every \$1 spent by a tourist railroad visitor, an additional \$0.96 may be generated in indirect and induced impacts
- Freight Rail Benefits
 - \$30 million investment to upgrade to freight rail estimated to generate 390 job-years
 - A \$30 million investment to upgrade to freight rail is estimated to yield \$28.5 million in regional public benefits
- Other Potential Impacts
 - Every tourist to CT is estimated to spend \$44-\$82 per day, based on studies of spending patterns of CT park, tourist excursion, and general tourist visitors
 - Based on limited studies, properties close to freight rail lines saw a decline in property value of approximately 4-8% as freight service was re-routed throughout the region

Next Steps

- Final Report



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