

# CENTRAL CONNECTICUT RAIL STUDY

## FREIGHT MARKET ANALYSIS REPORT



**CONNECTICUT DEPARTMENT OF TRANSPORTATION**  
STATE PROJECT NUMBER: 171-366

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## Table of Contents

<b>Executive Summary .....</b>	<b>3</b>
1.1 Improving the Potential for Freight Rail Growth in the Central Connecticut Rail Study Corridor – Influencing Factors .....	3
1.2 Central Connecticut Rail Network Reflects Statewide Rail Issues and Opportunities .....	4
1.3 Factors Supporting Rail Freight .....	4
1.4 Key Observations and Findings – Current and Potential Rail Demand .....	5
<b>Chapter 2. Regional Freight Rail Market Evaluation Purpose and Approach .....</b>	<b>8</b>
2.1 Why Conduct a Freight Rail Market Evaluation? .....	8
2.2 Methodological Approach .....	8
2.3 Organization of this Report: The Connecticut Rail Freight Story .....	11
<b>Chapter 3. Freight Rail: Historic, Geographic, and Institutional Context .....</b>	<b>13</b>
3.1 Central Connecticut Rail Network Reflects Statewide Rail Issues and Opportunities .....	13
3.2 Rail as a Critical Factor in Forming and Developing the United States .....	14
3.3 Growing Confidence in Rail: Old is New Again .....	16
3.4 Relationship between Class I and Short Line Railroads .....	18
3.5 Shippers/Consumers Benefit from Improved Rail Efficiency .....	19
3.6 Environmental Considerations .....	20
3.7 Freight Rail in Connecticut and the Northeast US .....	23
3.8 Current Rail Planning and Regulatory Environment .....	24
3.9 Federal Government Assistance to Freight Rail .....	26
3.10 State Government Assistance to Freight Rail .....	26
3.11 Coalition of Northeast Governors (CONEG) .....	28
3.12 Connecticut Regional Councils of Government in CCRS Study Area .....	28
<b>Chapter 4. Economic Trends and Goods Movement .....</b>	<b>30</b>
4.1 Globalized Freight Logistics and Supply Chains .....	30
4.2 How Railroads View the World .....	31
4.3 Modal Competition for Goods Movement in the Study Area .....	33
4.4 How Shippers View the World .....	33
4.5 The Customer Meets the Railroad – Carload and General Freight Service on Lower-Density Lines .....	34
4.6 The Rise of Intermodal Freight: Trucks and Trains are Collaborators as well as Competitors .....	35
4.7 Value of Maintaining a Viable Freight Rail Option in the CCRS Corridor .....	36
4.8 Population, Employment and Income Trends .....	37
4.9 CCRS Corridor-Level Freight Profile and Rail-Freight Friendliness .....	40
4.10 Connecticut Rail Service .....	44
4.11 Connecticut Commodity Flow Profile .....	44
4.12 Commercial and Industrial Growth Prospects for Central Connecticut .....	46
<b>Chapter 5. Profile of Corridor Area Rail Infrastructure, Operations, and Current and Potential Markets .....</b>	<b>51</b>
5.1 New England’s Connected System of Regional Rail Corridors .....	51
5.2 Multimodal, Intermodal Freight Transport .....	55
5.3 Infrastructure Barriers to Increasing Freight Rail Market Share and Service Quality .....	56
5.4 Impact of Passenger Rail Operators in or Connecting to CCRS Study Area .....	60
5.5 Freight Rail Operators in or Connecting to CCRS Study Area .....	60

<b>Chapter 6. Freight Rail Development Potential in the CCRS Corridor.....</b>	<b>76</b>
6.1 Key Observations and Findings .....	76
6.2 Current and Potential Rail Demand .....	76
6.3 Concerns and Risks to Potential Growth .....	79
6.4 Next Steps .....	80
6.5 Summary .....	81
<b>Appendix A: Shipper Discussion Guide.....</b>	<b>82</b>

## List of Figures

Figure 1. Factors Influencing CCRS Corridor Rail Volumes.....	3
Figure 2. New York, New Haven and Hartford Railroad Map, 1929.....	13
Figure 3. Freight Railroads in Connecticut, 2014.....	14
Figure 4. Class I Railway Miles in US (1960-2010) .....	15
Figure 5. US Freight Railroad Performance Since Staggers.....	17
Figure 6. Freight Miles Traveled by Rail and Truck (1980-2011) .....	18
Figure 7. Ton-Miles of Freight Moved (Rail/Truck, 1980-2008).....	18
Figure 8. Inflation-Adjusted U.S. Freight Rail Rates (1981-2013) .....	20
Figure 9. Freight Rail Fuel Efficiency Since 1980 (Ton-Miles per Gallon).....	21
Figure 10. Connecticut's Strategic Five-Point Freight Rail Action Plan .....	25
Figure 11. New England Vision for High Speed and Intercity Passenger Rail .....	29
Figure 12. Average Freight Revenue per Ton-Mile (Trucks, Class I Rail) .....	36
Figure 13. Percent Change in Real GDP by State, New England, 2013.....	40
Figure 14. New England's Knowledge Corridor.....	41
Figure 15: Existing and Potential Freight Customers .....	43
Figure 16. Commodities Originating and Terminating in Connecticut, 2012 (all modes) .....	44
Figure 17. Freight Tonnage by Mode (Entering, Within, Leaving CT) (2011 .....	45
Figure 18. Rail Traffic Originated and Terminated in Connecticut (2012).....	46
Figure 19. Connecticut Rail Freight (1000s Tons) 1997-2040 .....	47
Figure 20. Knowledge Corridor.....	53
Figure 21. Pan Am Southern System Map Showing Patriot Corridor.....	54
Figure 22. Crescent Corridor Map .....	55
Figure 23. Freight Railroad Weight Limit Routes and Priority Segments Map .....	59
Figure 24. Freight Rail Operating in Connecticut .....	61
Figure 25. Central Connecticut Rail Study Statewide Rail Map .....	62
Figure 26. Pan Am Railways Trackage .....	63

## List of Tables

Table 1. CCRS Population, Unemployment and Income .....	39
Table 2. CT Commodity Flows, All Modes (2007 & 2012 by value, weight & ton-miles).....	49
Table 3. Previously Identified Barriers to Rail Freight Market Growth in Connecticut .....	57
Table 4. Summary of CCRS Area Railroad Markets (Current and Projected).....	78

## Executive Summary

### 1.1 Improving the Potential for Freight Rail Growth in the Central Connecticut Rail Study Corridor – Influencing Factors

This report, one element in the larger Central Connecticut Rail Study, examines the potential for maintaining and expanding freight rail service and business along the Pan Am Southern (PAS) Line from Waterbury to Berlin, Connecticut.

A balanced transportation system seeks to accommodate passenger and freight travel needs through the available mode options in a given geography. With rail transportation, state economic development interests, such as those in Connecticut, can be served by helping low-density areas of industrial, manufacturing and resource extraction to retain and improve access to the national rail network, via regional and short line railroads as one of their modal use options. Locally, community vitality, corridor jobs and redundancy of travel modes all depend upon investment in this line to support operations of a customer-service oriented railroad.

The full report examines a range of factors that have influence on the viability of increasing corridor volumes, as shown in Figure 1.



Figure 1. Factors Influencing CCRS Corridor Rail Volumes

## 1.2 Central Connecticut Rail Network Reflects Statewide Rail Issues and Opportunities

Within the Northeast U.S. rail system, Connecticut stands out as a geographic link between population centers (notably New York City and Boston), between deep-water ports and inland freight destinations and generators, and between Class I railroad gateways and connecting regional corridors. On a smaller scale, the central location of the CCRS Study Corridor within the state's rail system similarly positions it to serve the northeast corridor better through infrastructure investment, by bringing the rail network into a state of good repair, and, progressing toward national weight standards.

In Connecticut (CT), the movement of freight is essential to businesses and residents. The State of Connecticut Department of Transportation (CTDOT) has for many years recognized and acted upon the need to optimize opportunities to better utilize the economic asset that is the state- and privately-owned rail system for freight and passengers. Yet today, CT originates and terminates only 3% of its freight by rail.<sup>1</sup> Potential opportunities to increase the share of freight that moves by rail exist. Through appropriate programs and investment, a restored rail network can, in turn, support much-needed sustainable economic development throughout Connecticut.

Nationally, the volume of all freight (truck, rail, marine, air, pipeline) increased from 18.9 billion tons to 19.7 billion tons, from 2007 to 2012, and is expected to reach 28.5 billion tons by 2040—a 45 percent increase over total 2012 freight volumes.<sup>2</sup> The portion of this freight that was moved by rail in 2012 was 10.3%, and rail's share of total freight in 2040 is expected to decline slightly to 9.7% nationally, it still represents an increase in rail volumes of more than 37 percent.

With the projected increase in freight and rail freight growth at the national and regional level, Connecticut is in a position to connect via freight rail to larger growing markets via the Patriot Corridor, the Crescent Corridor and, once improvements have been implemented, to the Knowledge Corridor.

## 1.3 Factors Supporting Rail Freight

Factors examined in this report which support potential retention and growth in rail freight include:

- Geographic location of the corridor at the heart of a populous region, with ability to serve Boston, New York, New England, and reach national and global markets through an excellent freight rail and deep-water port network.
- Rail network that has capacity<sup>3</sup> to accept new freight volumes, and is currently being improved with private, state, and federal funds by multiple stakeholders,

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<sup>1</sup> Source: AAR data,

[https://www.aar.org/Style%20Library/railroads\\_and\\_states/dist/data/pdf/Connecticut%202012.pdf](https://www.aar.org/Style%20Library/railroads_and_states/dist/data/pdf/Connecticut%202012.pdf)

<sup>2</sup> Source: FHWA Freight Facts and Figures 2013, Table 2-1,

[http://ops.fhwa.dot.gov/freight/freight\\_analysis/nat\\_freight\\_stats/docs/13factsfigures/table3\\_14.htm](http://ops.fhwa.dot.gov/freight/freight_analysis/nat_freight_stats/docs/13factsfigures/table3_14.htm)

<sup>3</sup> On the line-haul network, Class I railroads are working to address new chokepoints due to recent growth in trains moving energy sector commodities such as crude oil and frac sand. This situation is not currently a limiting factor on freight growth in central Connecticut, but could have (and may already be having) impacts on rates – e.g., on Douglas fir coming from the Pacific Northwest.

- Existing regional rail network that is receiving significant public and private sector investment and attention regionally and nationally in an effort to increase freight and passenger rail traffic,
- Extensive land availability along multiple rail lines with direct rail spur access to properties and parcels available for development as well as sites that offer good potential for transload facilities.
- Skilled workforce availability for businesses growth.
- Interagency and interstate support, active collaboration, institutional innovation and effective funding for rail passenger and freight-related economic development.
- CTDOT's long established relationships with the railroads, including funding for identified freight rail projects (with over \$10 million invested in 2013, alone).
- CTDOT's important relationship with MassDOT and other area agencies interested in working together on regional rail improvements.
- Existing commodity flow profile that is suited to rail (including aggregate, steel, scrap fuel, and wood products).
- Significant truck congestion, especially in Hartford, and a growing truck driver shortage that has encouraged businesses to review all of their modal options.

#### **1.4 Key Observations and Findings – Current and Potential Rail Demand**

The level of freight rail business on the PAS Line from Waterbury to Berlin (formerly Waterbury to Hartford) has been fluctuating since the Great Recession. The type of business on the PAS Line is similar to that typically found along shortline railroad operations – generally small- to medium-sized businesses that use carload rail to move bulkier, less time sensitive and more transportation cost sensitive products, such as chemicals, steel, fuel, scrap and wood products. The PAS marketing team, along with the Norfolk Southern (which is the Class I national railroad serving the line) seeks opportunities to grow rail movements for existing businesses in the corridor, along with attracting new rail using companies to the area. The existing conditions could change quickly if existing and potential customers along the line could rely on more consistent and timely freight rail service available through rail infrastructure improvements and a focused economic development strategy to attract manufacturing, material distribution, and other businesses to CT that all require dependable freight rail service.

A partnership between CTDOT and PAS could increase the chances of success by allowing more sharing of some otherwise privately held information with CTDOT and CT Department of Economic and Community Development (DECD) staff. As an example, DECD's "First Five" Program provides financial assistance for large-scale business projects to encourage business expansion, relocation and job creation. Eligible projects must create no less than 200 jobs within 24 months or invest no less than \$25 million and create no less than 200 new jobs within five years. Currently, the 11 participating companies are expected to create up to 5,248 jobs, and retain 12,690 jobs, as well as generate \$1.3 billion in capital investments.

**Current Volumes:** Based on available information, the Study Team estimates that current rail freight car volumes (2013) on the PAS Line are approximately 1,300 carloads annually. This estimate does not include volumes from one of the current customers interviewed, so this is a conservative estimate.

**Potential Near-Term Growth:** New business on the line could potentially contribute an additional 1,500-1,800 cars annually. Should these business deals reach fruition, the additional volume when these companies are at full operation, could more than double the PAS' existing traffic in the study area.

The commodities being moved are typical of carload movements, similar to the current traffic mix, and include:

- **Propane** – an essential regional energy source; no alternative in rural areas.
- **Lumber** – PAS access to New England lumber; Housatonic could ship on PAS Line.
- **Construction Debris** – a growth area cited by railroads; new Naugatuck customer in 2015.
- **Metals** – a growth area cited by railroads; motivated local businesses want to increase rail use.
- **Aggregate** – a significant growth area, if weight restrictions on Springfield Line are resolved.

Businesses engaged with these commodities are currently located along the corridor, and are or have been using rail to receive or send product as long as service is dependable and cost effective. Many expressed interest in diverting existing truck trips to rail if service, cost and transit time requirements can be met. Further, these commodities are in alignment with the more promising growth areas reported by other freight railroads surrounding the Study Area. Finally, they are product types that are suited to rail, and thus are not beyond the traditional commodity profile for rail freight.

Growth in rail's share of these movements will depend on the ability of PAS to deliver and pick up cars more frequently, to provide consistent and reliable service in conjunction with other freight rail partners, and to offer competitive rates. To some extent, infrastructure investment will aid that capacity, along with improved marketing, economic development, and other programs.

**Longer Term (10 years plus) Growth Potential:** On a national level, use of freight rail options, including direct and transload services, has been growing. However, the railroads' ability to successfully capture potential markets is based on their available capacity, service levels, costs, and length and consistency of transit times. In addition, weight restrictions by Metro North and Amtrak, which limit carloads to less than the national standard of 286,000 pounds (286K) and some height restrictions, also hamper the line's ability to compete for rail served customers.

However, based on recent growth and the high amenability to rail shipping, the kinds of rail-served businesses that could be attracted to the CCRS Study Corridor in the future include those who ship or receive waste/scrap, newsprint, basic chemicals, cereal grains, plastic/rubber, nonmetallic minerals, agricultural products and other commodities for rail freight growth potential. These commodities are more likely to be outbound than inbound.

Accordingly, the potential exists for longer term growth in the study corridor assuming active programs to attract rail using customers, national 286K weight and height standards (such as 17

foot clearance for “Plate F”<sup>4</sup> cars) can be achieved, and that the railroads can consistently meet customer requirements.

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<sup>4</sup> Association of American Railroads Equipment Diagrams for Interchange Service, Plate F Limited interchange service adopted 1974, revised 1976. <http://www.icrr.net/plates.htm>

## **Chapter 2. Regional Freight Rail Market Evaluation Purpose and Approach**

### **2.1 Why Conduct a Freight Rail Market Evaluation?**

At its core, the future of the freight rail market on the Pan Am Southern track between Waterbury and Berlin (referred to herein as the PAS Line, Waterbury Line or the Line) is dependent on the type and timing of private sector business growth, the needs of shippers and the capacity of the rail system to deliver attractive, reliable, service at a competitive price.

To understand the investment opportunities in the Central Connecticut Rail Study (CCRS) study area, it's important to consider rail as but one transportation component within a multimodal freight logistics market, with trucks posing as the major competitor to rail for business in this region. Second, we must understand the network of goods movement that the CCRS rail system connects to, including intermodal hub connections to truck, air and marine freight modes in order to identify needed investment outside the study area, which may require interstate, federal and/or public-private partnering to address effectively.

To explore this future, some of the questions this report will answer—or at least shed light on—include the following:

1. What are the current operational conditions for freight rail within and connecting to the CCRS Study Area?
2. How much freight is being carried on rail within or near the CCRS Study Area?
3. What is the local and regional business case for shipping via rail?
4. What are the concrete near term (2020) and concept-level longer term (2040) growth opportunities for freight and freight rail?
5. Are there obstacles to increasing the absolute volume and percentage share of freight carried via rail? If so, how can these obstacles be eliminated or minimized? Which obstacles fall within the purview of government action?
6. What government actions, including investments, policies, regulations and partnerships, can increase freight rail utilization in the CCRS study area, and in the state?
7. What are railroads' plans for expansion, and what should they be doing?

### **2.2 Methodological Approach**

#### **2.2.1 Key Assumptions**

This freight market analysis assumes that the freight rail infrastructure is improved as a first step in investment options within the corridor. This will increase service reliability as it increases from its current restricted speeds of 10 MPH (FRA Class I) along much of the line to a maximum of 25 MPH (FRA Class II) freight train speeds, or possibly higher to 40 MPH (FRA Class III) freight train speeds within the corridor.

### **2.2.2 Analytic Approach to Assessing CCRC's Freight Rail Potential**

In order to assess the general market potential for freight rail in the CCRS corridor, and to determine whether that potential is sufficient to warrant a substantial investment by the State of Connecticut, Chapters 2, 3 and 4 of this report examine the following:

- **Impact of general economic health and freight volume and modal trends and forecasts for the U.S., Connecticut and the region surrounding the study corridor.** Using national and state-level economic indicators, this report assesses recent trends and projections for population and income, which drive production and consumption patterns overall. The report compiles most recent available federal freight data (primarily the USDOT Bureau of Transportation Statistics, Center for Transportation Analysis/FHWA Freight Analysis Framework) and state economic data. The study team will draw conclusions based on these sources with respect to recent commodity flows and freight mode splits, especially within the New England region.
- **Capacity of the rail system to handle increased carload traffic.** This includes both infrastructure (within the corridor as well as connections to the regional and national intermodal market) as well as customer service characteristics. These factors are assessed through examination of the local corridor (relying upon the field review and infrastructure analysis associated with this study) and review of available studies, and interviews with Class I and Short Line railroad representatives and corridor customers. The study team's professional experience in the Northeast U.S. will help frame information gleaned from the sources identified. Physical and institutional obstacles and opportunities are identified, and recommendations to address them are offered for consideration.
- **Specific CCRS corridor business conditions, concerns and plans for the next five years,** for existing rail-served customers of Pan Am Southern along the corridor. Current and five-year estimated volumes of existing shippers represent the most concrete metrics and foundation for infrastructure investment by the railroads, and are the best indicators for government policy and investment as well. Interviews with current rail-served businesses yield experience-based information that bears directly on the potential for PAS to increase its rail volumes in the corridor. Concept-level 2040 rail freight flows are briefly discussed.
- **Examination of trends relative to trucking capacity and travel time reliability.** The current and future ability of trucks to provide cost-effective reliable service depends in part on recurrent and incident-related highway congestion and the ability and willingness of state and federal governments to address infrastructure needs. Fuel costs per ton-also influence a shipper's freight mode decision. These issues change rapidly, and vary by state and region, but are treated briefly in this report at an order-of-magnitude level.
- **Corridor attractiveness to new or expanded rail-served business.** Apart from business demand for rail-served sites, we consider the attractiveness of this corridor to new or substantially expanded businesses. The report will consider Connecticut's growth industries, and their likely place in the freight service continuum associated with different

freight modes. The study team will make a concept-level review of corridor-adjacent industrial land availability and other site-specific conditions that would impact industrial location. Materials from the Connecticut Department of Economic and Community Development (DECD) and agency staff consultation inform this discussion as well.

### 2.2.3 Research, Reference Reports and Data

This report is based on and includes references to previous tasks in the CCRS, especially the Existing Conditions Report, the Infrastructure Analysis (Task 9B.1), Review of Future Land Use Assumptions (Task 8A), Forecast of Future Transportation Conditions (Task 8B). The report also assumes and relies upon data and policies contained within important state documents including the Connecticut State Rail Plan (2012).

Data sources relied upon for this report include the Surface Transportation Board (STB)'s *Freight Commodity Statistics*, data from the Association of American Railroads (AAR), including their *Profiles of U.S. Railroads*, *U.S. Freight Railroad Industry Snapshot* and *Railroads and States* (which uses Carload Waybill Samples as data sources), United States Department of Transportation (USDOT) Bureau of Transportation Statistics (especially the Commodity Flow Survey, or CFS), Federal Highway Administration (FHWA) Freight Analysis Framework (FAF3.5), US Bureau of Labor Statistics data, United States Census Bureau, DECD's 2014 Economic Development Strategy, and the University of Connecticut State Data Center, and project information derived from CTDOT's New Haven – Hartford - Springfield and MassDOT's Knowledge Corridor "Restore Vermonter" HSR Projects.

### 2.2.4 Stakeholder Views are Critical to Understanding Market Potential

In order to understand real opportunities for growing the freight rail mode share in the CCRS study area, discussions with railroads and current and potential shippers were of first importance. These helped identify and focus the study efforts on issues and concerns as well as contextualize statistical data, historic trends and current forecasts, and in the case of shippers, provide concrete details on volumes, commodities, likely growth and barriers or threats to continued, expanded or new rail utilization.

Railroads operate within communities, and within various state and federal government regulatory policies. In many cases the Federal Railroad Administration (FRA) has final authority, however railroads have learned over the years that public relations and a working relationship with local, state and federal jurisdictions make everyone's life easier, safer and more profitable. The CCRS study team spoke with a wide range of stakeholders representing operators, businesses, communities, regulators and decision-makers. Since freight rail is dependent for its vitality on the health of the larger economy, this approach makes good sense.

The study team met with the railroads early in the analysis, then with community representatives and with shippers and existing rail customers (see Discussion Guide for the latter, Appendix A). The railroads were approached again as this report was finalized, in order to follow up on issues, ideas and events that had surfaced during the course of the study.

Eight freight railroads were contacted and seven were reached for consultation, to gather information on current and promising growth areas in their respective markets.<sup>5</sup> The study team contacted the following railroads that provided very useful public information, without compromising needed privacy as ongoing negotiations are underway with new customers.

- Pan Am Southern Railway (PAS)
- Norfolk Southern (NS)
- Genesee & Wyoming
  - Connecticut Southern Railroad Company (CSO)
  - Central New England Railroad Company (CNE)
- Providence and Worcester Railroad Company (PW)
- Naugatuck Railroad Company
- Housatonic Railroad

*Current PAS Line Shippers/Manufacturers Consulted:*

- Firestone Building Products (Bristol)
- ClarkDeitrich Building Systems (Bristol)
- AmeriGas Propane (Southington)
- Albert Brothers (Waterbury)
- Forestville Lumber Co. (Plainville)
- Meyer Enterprises (Plainville)

*Potential PAS Line Shippers/Manufacturers Consulted:*

- Tilcon Connecticut (Plainville) (formerly served by PAS)
- Inland Fuel Services (potential new customer)

## **2.3 Organization of this Report: The Connecticut Rail Freight Story**

This report begins with general economic and industry information necessary to establish an analytic framework, and in successive chapters moves to more specific regional and corridor-level data and insights provided primarily by the railroads and current rail-served businesses.

The report also seeks to provide decision-makers with insight into the needs and characteristics of Connecticut's rail operators and their potential business partners in the Study Area. Second, a more detailed assessment is provided regarding the ability of Connecticut's regional rail network to compete with service provided by trucks. Both pieces depend on an overlapping set of information relating to perspectives, business operations, system capacity and infrastructure, customer service and costs. Pulling these various threads together, a picture of the freight and freight rail growth potential of Connecticut will emerge. The report concludes with key findings about rail freight growth along or connected to the PAS Line.

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<sup>5</sup> Note that there are serious limitations on disclosure of information that is considered by the railroads to be proprietary, although this is precisely the information needed by CTDOT to assess the market potential and determine whether or how to use state and federal resources in the corridor.

Chapter 1 serves as an Executive Summary and gives readers an overview of the findings of this effort.

Chapter 2 provides background to put railroads in perspective, historically, geographically and economically. Although some readers may already understand the importance of freight transportation to our regional and national economies, and may be familiar with the status and promise of rail within the multi-modal freight network, it is important to include discussion of public benefits and the public interest that is at stake, even within a freight rail system that is largely under private ownership.

Chapter 3 provides information on the economic trends and commodity flow patterns that form the larger economic foundation that we must examine in order to properly assess Connecticut's ability to increase rail freight in the state.

In Chapter 4, this report drills down into specific discussion of current and projected rail traffic and the potential to increase volumes on the Pan Am Southern route from Waterbury to Berlin (PAS Line).

Chapter 5 compiles key findings, and assesses the relative strengths of important rail market growth factors. It identifies areas of potential state action or investment, and considers the potential for unintended adverse impacts from those actions.

Chapter 6 highlights freight rail development potential in the CCRS Corridor. Based on the information laid out in previous chapters, this chapter identifies the best options for increasing the share of freight that is moved by rail in Connecticut.

## Chapter 3. Freight Rail: Historic, Geographic, and Institutional Context

### 3.1 Central Connecticut Rail Network Reflects Statewide Rail Issues and Opportunities

Within the Northeast U.S. rail system, Connecticut stands out as a geographic link between population centers (notably New York City and Boston), between deep-water ports and inland freight destinations and generators, and between Class I railroad gateways and connecting regional corridors. Connecticut has played this role both historically (Figure 2) and in today's rail freight market (Figure 3). On a smaller scale, the central location of the CCRS Study Corridor within the state's rail system similarly positions it to serve the northeast corridor better through infrastructure investment, by bringing the rail network into a state of good repair, and, progressing toward national weight standards.



Figure 2. New York, New Haven and Hartford Railroad Map, 1929

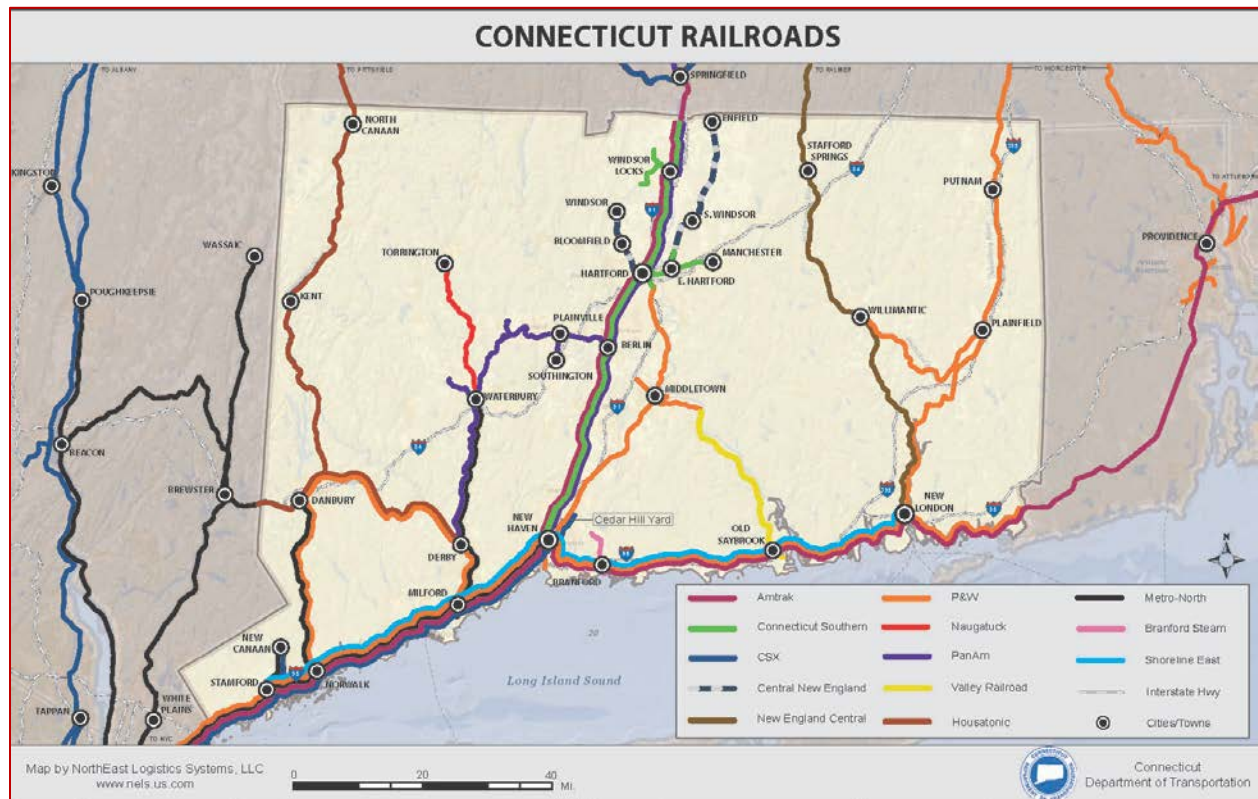


Figure 3. Freight Railroads in Connecticut, 2014

In Connecticut (CT), the movement of freight is essential to businesses and residents. The State of Connecticut Department of Transportation (CTDOT) has for many years recognized and acted upon the need to optimize opportunities to better utilize the economic asset that is the state- and privately-owned rail system for freight and passengers. Yet today, CT originates and terminates only 3% of its freight by rail.<sup>6</sup> Potential opportunities to increase the share of freight that moves by rail exist. Through appropriate programs and investment, a restored rail network can, in turn, support much-needed sustainable economic development throughout Connecticut.

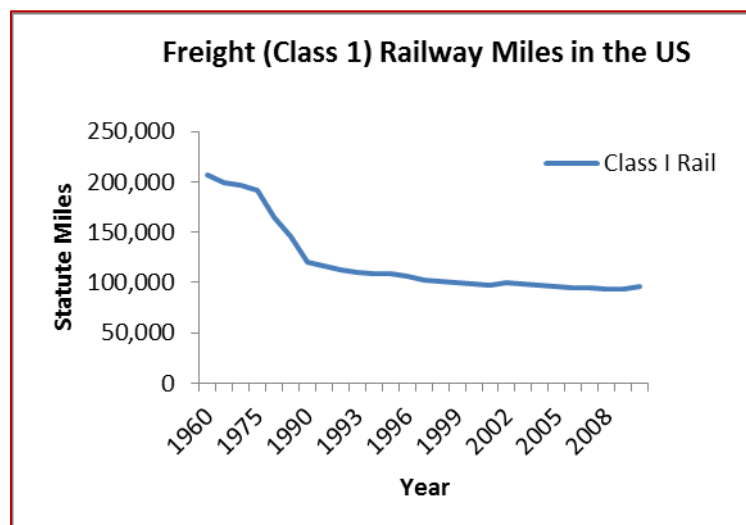
### 3.2 Rail as a Critical Factor in Forming and Developing the United States

The history of the United States and the rise of the railroads have been intertwined since the early 1800s. Railroads, nation-building and industrial development combined to create a critical historical nexus in development of the United States that extends from mid-nineteenth century settlement patterns, natural resource exploitation and agricultural market access through to today's just-in-time global freight network and transit-oriented development trends. Throughout this long and complex evolution, the railroads have always, and still, serve to connect towns with each other as well as to impact communities with their rights-of-way and operations. Railroads represent rural lifelines and urban conveniences that need to be balanced with their potential impacts on surrounding communities, such as potential environmental impacts and infrequent hazards. Municipalities in Connecticut still depend on rail for safe, efficient and environmentally friendly passenger and freight transport.

<sup>6</sup> Source: AAR data,  
[https://www.aar.org/Style%20Library/railroads\\_and\\_states/dist/data/pdf/Connecticut%202012.pdf](https://www.aar.org/Style%20Library/railroads_and_states/dist/data/pdf/Connecticut%202012.pdf)

Railways running east-west across the country were the catalyst to the economic growth and boom the country experienced in the early 1900's and provided the connections necessary to move goods and people throughout an extensive network. Today these connections are ever more important in not only connecting places and fostering growth, but also in sparking economic development in a cost-effective and environmentally responsible fashion. If the weight-restricted gateway to Connecticut (at the Amtrak bridge over the Connecticut River in Windsor Locks) is addressed in conjunction with other key weight restrictions, the state is well positioned geographically and institutionally to better serve existing rail users and expand its rail and intermodal freight markets, as new connections to the larger network open up through infrastructure reinvestment programs.

The railroad industry grew rapidly and by 1920, at its height, operated on more than 250,000 miles of track and employed 1.8 million people—more than any other industry at the time<sup>7</sup>. Today, that number has decreased to 170,683 (including both freight and passenger rail). Figure 4<sup>8</sup> shows the decline in Class I<sup>9</sup> freight dedicated railway miles since the 1960s with dramatic decreases between 1970 and 1990 and more moderate decreases, between 1990 and 2010 (decrease of 76,721 miles verse 24,185 miles respectively) leading to relative stability. The decrease in system miles is associated with the bankruptcy of many private railways in the 1970s and the subsequent abandonment of track, conversion to Class II or 3 railroads, and/or transfer to passenger rail. The miles reflected in Figure 4 depict only Class I railroads and do not include trackage and hauling rights on Class II, Class III or passenger railroads.



**Figure 4. Class I Railway Miles in US (1960-2010)**

<sup>7</sup> American Association of Railroad, <https://www.aar.org/keyissues/Documents/Background-Papers/A-short-history-of-US-Freight.pdf>

<sup>8</sup> Source: Bureau of Transportation Statistics, United States Department of Transportation, Table 1-1 System Mileage Within the United States  
[http://www.rita.dot.gov/bts/sites/rita.dot.gov/bts/files/publications/national\\_transportation\\_statistics/html/table\\_01\\_01.html](http://www.rita.dot.gov/bts/sites/rita.dot.gov/bts/files/publications/national_transportation_statistics/html/table_01_01.html)

<sup>9</sup> The Surface Transportation Board defines three classes of railroads based on annual operating revenues. Class 1 > \$398.7 million, Class 2 \$398.7 million < \$31.9 Million, Class 3 < \$31.9 million.

It is important to note that while Class I railroads comprise the spine of freight rail transport and constitute a key factor in regional and national economic growth, the nation's regional (Class II), and short line and local railroads (mostly Class III) railroads are of equal importance in the overall rail network. By providing shipper access via regional and short line service, they account for an additional 43,188<sup>10</sup> miles of railway.

### **3.3 Growing Confidence in Rail: Old is New Again**

Notwithstanding the primary reliance on trucking to move the nation's goods, today's growing interest in freight rail stems from the advantages and benefits this mode offers to shippers, consumers, taxpayers, operations on parallel highways, and the environment. After decades of decline and stagnation, railroads have re-emerged as a strong force in economic revitalization, global connectivity and regional and rural health. Rail's importance has begun to echo the nation's distant past, in terms of rail's prominence in American life.

#### **3.3.1 Railroad Performance Metrics Improve after 1980 Staggers Act**

Although even after its peak in 1916 to 1920, the freight rail industry continued to provide the crucial transportation links needed for economic development. As cumbersome and increasingly inconsistent regulations accrued, the rail industry could not meet needed maintenance and growth requirements to keep its infrastructure up to date. Gradually this deferred investment, a failure to respond to market changes, along with the rise of trucking and its publicly funded highway network, drove many railroads bankrupt, including most northeastern U.S. railroads.

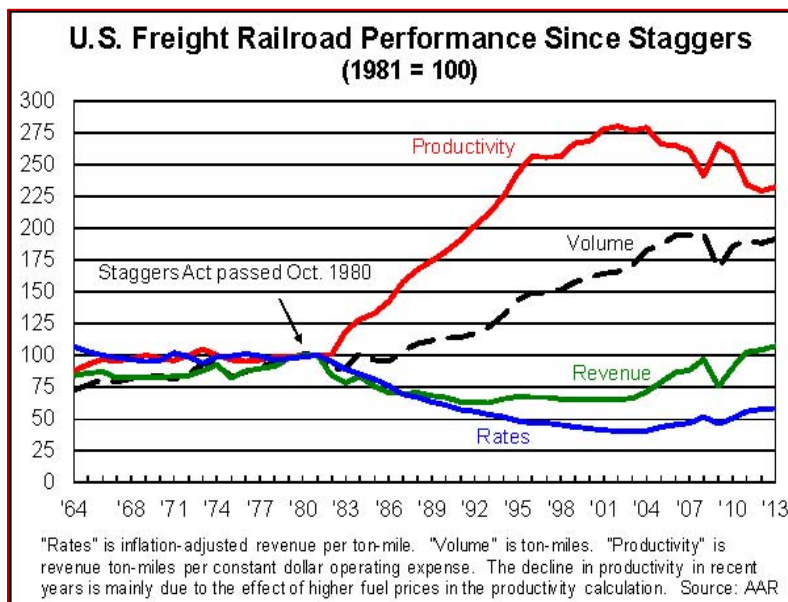
While the amount of freight tonnage moved via rail has decreased significantly since the 1920s, deregulation of the industry in 1980 reversed this trend. Since the so-called Staggers Rail Act of 1980<sup>11</sup> was passed, Class I railroads have experienced a steady increase in the volume (measured in ton-miles) of goods moved (Figure 5). Today, approximately 4.8 million tons of goods are moved via rail every day in the U.S.<sup>12</sup>

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<sup>10</sup> Source: Association of American Railroads, <https://www.aar.org/keyissues/Documents/Background-Papers/Overview-US-Freight-RRs.pdf>

<sup>11</sup> Public Law 96-448 <http://www.gpo.gov/fdsys/pkg/STATUTE-94/pdf/STATUTE-94-Pg1895.pdf>

<sup>12</sup> Source: Association of American Railroads, <http://freightrailworks.org/videos/supply/>, accessed 10-13-14



**Figure 5. US Freight Railroad Performance Since Staggers**

Nationally, the volume of all freight (truck, rail, marine, air, pipeline) increased from 18.9 billion tons to 19.7 billion tons, from 2007 to 2012, and is expected to reach 28.5 billion tons by 2040—a 45 percent increase over total 2012 freight volumes.<sup>13</sup> The portion of this freight that was moved by rail in 2012 was 10.3%, and rail's share of total freight in 2040 is expected to decline slightly to 9.7% nationally, it still represents an increase in rail volumes of more than 37 percent.

While trucks register more total vehicle miles annually than railroads<sup>14</sup> (Figure 6), total annual ton-miles (movement of one ton a distance of one mile) are higher for rail (Figure 7) reflecting the fact that for many freight movements, rail is more cost- and fuel-efficient at moving heavy loads longer distances.<sup>15,16</sup> Railroads have been an attractive mode choice for moving commodities because the industry's shipping cost (revenue per ton mile) is significantly lower than other modes. In fact, real rates for shipping, adjusted for inflation, have decreased approximately 40 percent between 1985 and 2007.<sup>17</sup>

<sup>13</sup> Source: FHWA Freight Facts and Figures 2013, Table 2-1, [http://ops.fhwa.dot.gov/freight/freight\\_analysis/nat\\_freight\\_stats/docs/13factsfigures/table3\\_14.htm](http://ops.fhwa.dot.gov/freight/freight_analysis/nat_freight_stats/docs/13factsfigures/table3_14.htm)

<sup>14</sup> Based on vehicle classification truck includes single-unit 2 axle 6 tire or more and truck combination. Rail is measured in Class 1 freight, car miles.

<sup>15</sup> Source: Bureau of Transportation Statistics, United States Department of Transportation, Table 1-35 U.S. Vehicle-Miles, Table 1-49 U.S. Ton-Miles of Freight [http://www.rita.dot.gov/bts/sites/rita.dot.gov.bts/files/publications/national\\_transportation\\_statistics/index.html](http://www.rita.dot.gov/bts/sites/rita.dot.gov.bts/files/publications/national_transportation_statistics/index.html)

<sup>16</sup> Miles and ton-miles are for class 1 railroads only. The BTS does not publish total miles for class 2 and 3 freight movement. Ton-miles for all freight movement is published, class 2 and class 3 travel approximately 100,000 ton miles according to the BTS

<sup>17</sup> "Railroad Performance Under the Staggers Act, Regulation, Winter 2010-2011, p. 36, citing STB rate study of 2010. [http://www.lrca.com/topics/Eakin\\_Bozzo\\_Meitzen\\_Schoech\\_Railroad\\_Performance\\_Under\\_the\\_Staggers\\_Act.pdf](http://www.lrca.com/topics/Eakin_Bozzo_Meitzen_Schoech_Railroad_Performance_Under_the_Staggers_Act.pdf)

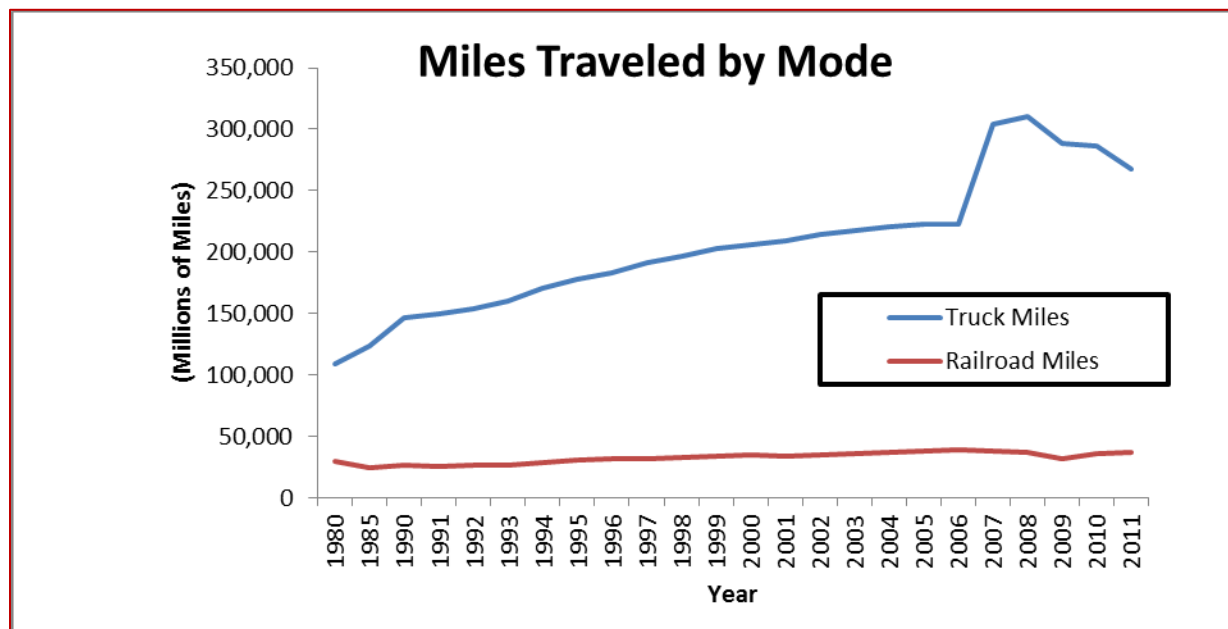


Figure 6. Freight Miles Traveled by Rail and Truck (1980-2011)

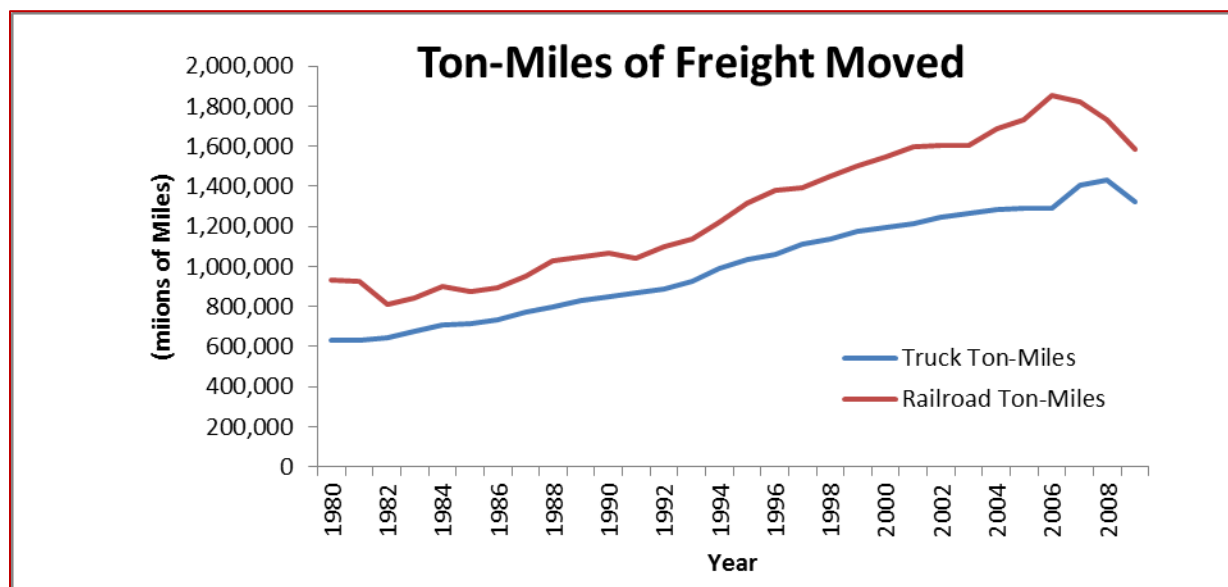


Figure 7. Ton-Miles of Freight Moved (Rail/Truck, 1980-2008)

### 3.4 Relationship between Class I and Short Line Railroads

The Surface Transportation Board classifies railroads based on its adjusted operating revenues for three consecutive years. That number is multiplied by a factor to allow for inflation over time, using a 1991 base year.<sup>18</sup> Currently, US Class I railroads are defined (by the American Association of Railroads) as line haul freight railroads with operating revenue of \$467 million or more. Two Class I railroads – Norfolk Southern (a partner with Pan Am Railways in the PAS corridor itself) and CSX Transportation, either operate in or connect to the CCRS study area.

<sup>18</sup> Basis for the STB regulation is found at 49 CFR Part 1201 Subpart A).

Class II railroads, also referred to as regional railroads, are those non- Class I line-haul railroads with annual revenues of at least \$40 million, or that operate on at least 350 miles of road and have at least \$20 million in annual revenues. Finally, Class III Railroads, which include smaller short line and terminal or switching railroads.

Post Staggers Act, the railroad industry rationalized goods movement as global logistics also quickly evolved. Long haul “unit trains” of uniform commodities became the revenue source of choice for Class I railroads, while Class II and III regionals and short lines have become the lifeline to smaller clusters of manufacturers and rural producers of carload movements onto the Class I network, or to regional destinations.

Class I railroads have invested heavily in their infrastructure in the past decade – more than \$20 billion annually—in response to growing demand for reliable service. The smaller railroads have had more difficulty assembling the amounts necessary to address localized and systemic infrastructure needs, particularly the need to upgrade track and structures to handle now-standard 286,000-pound loads.

The Federal Railroad Administration notes the consolidation of Class III rail carriers under the control of holding companies as a significant change in geographic and economic features of this group of railroads. Currently, 27 companies control nearly 270 small railroads.<sup>19</sup> By far, the largest of these holding companies is Genesee and Wyoming, which controls approximately 112 short line railroads, including the Connecticut Southern Railroad and the New England Central Railroad, in Connecticut. In FRA’s view, based on discussions with railroads and banks, this situation has resulted in more infrastructure investment resources available for those railroads under the umbrella of a holding company. Those small railroads that are independent should be evaluated carefully for risk, as states and the federal government consider public assistance to address infrastructure needs.

Another emerging trend in the relationship between Class I carriers and the smaller railroads, is partnering for strategic investment that benefits both parties. This is exemplified in the partnership between Norfolk Southern and Pan Am Railways, which resulted in Pan Am Southern (PAS), the owner and operator on the CCRS corridor between Waterbury and Berlin.

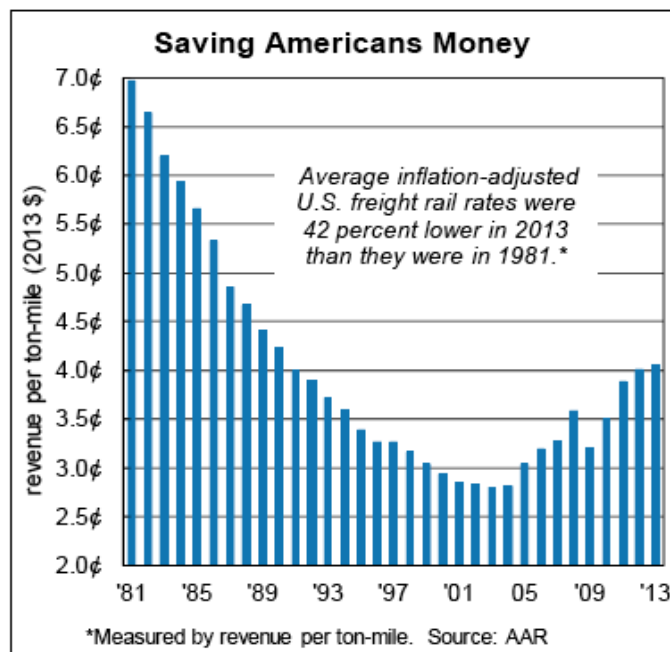
### **3.5 Shippers/Consumers Benefit from Improved Rail Efficiency**

Freight rail provides numerous public benefits that result in financial savings. Shipping rates have decreased by 42% since 1981, allowing shippers to move almost twice the amount of freight today as it did 30 years ago (Figure 8<sup>20</sup>). This translates into end user cost savings.

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<sup>19</sup> Federal Railroad Administration, *Summary of Class II and Class III Railroad Capital Needs and Funding Sources, a Report to Congress* (DOT/FRA, October 2014)

<sup>20</sup> Source: Association of American Railroads,  
<https://www.aar.org/BackgroundPapers/Overview%20of%20Americas%20Freight%20Railroads.pdf>



**Figure 8. Inflation-Adjusted U.S. Freight Rail Rates (1981-2013)**

These cost savings will fluctuate based on market conditions and infrastructure investment cycles. However, they will tend to be preserved as competition between railroads for customers is preserved. This is in part a factor of a customer’s ability to access more than one railroad, or to gain access to more than one Class I railroad, such as CSX or Norfolk Southern in the Northeast region.

In reviewing railroad rates from 1985-2007, the Surface Transportation Board (STB) found that the increases in inflation-adjusted rail rates that it saw for 2005, 2006 and 2007 were due to flattening productivity curves in the rail industry and increased costs of railroad input prices – not railroad market power.<sup>21</sup>

## 3.6 Environmental Considerations

### 3.6.1 Fuel Efficiency per Ton-Mile

In the United States, transportation accounts for 28% of greenhouse emissions (measured in CO<sub>2</sub> output) and is the second largest emitter behind electricity generation.

Within transportation’s share of greenhouse gas emissions, 22.1% are from freight trucks as while 2.3% are caused by rail freight. Nationally, freight trucks emit 5.6% or 401.1 million metric tons of CO<sub>2</sub> annually as opposed to the 0.8% or 42.2 million metric tons emitted by freight rail<sup>22</sup>. When compared by emissions on a “per ton of freight moved one mile” (ton-miles) basis, trucks produce significantly more kilograms of CO<sub>2</sub> than freight rail. Freight rail emits almost five times less CO<sub>2</sub> than trucks and this lower carbon footprint helps make rail a more

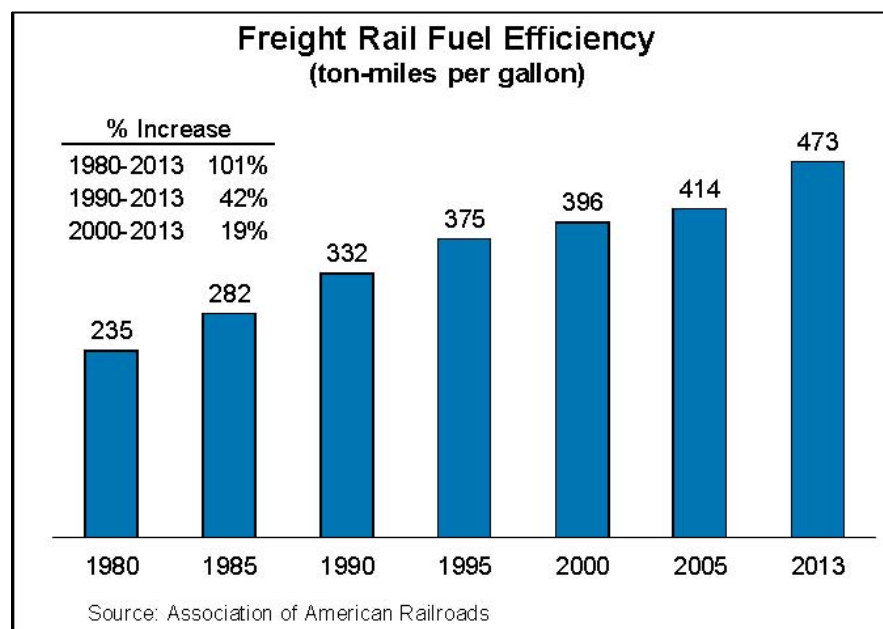
<sup>21</sup> <http://www.stb.dot.gov/stb/industry/1985-2007RailroadRateStudy.pdf>

<sup>22</sup> Sources: Table 4-6: Energy Consumption by Mode of Transport, Bureau of transportation Statistics; Inventory of U.S. Greenhouse Gas Emissions and Sinks: Report EPA 430-R-13-001 2013

environmentally friendly way to move goods. Based on these figures, the American Railroad Association estimates that if 10% of trips currently taken by long haul trucks switched to rail, the nation would save one billion gallons of fuel a year, decreasing annual the greenhouse gas emissions by 11 million tons<sup>23</sup>.

A portion of truck emissions is explained by the idling of engines on congested roadways. In 2005, a study produced by the Texas Transportation Institute study found that 2.3 billion gallons of fuel were wasted solely due to congestion across the 85 urban areas studied<sup>24</sup>. In terms of congestion, CO2 emissions, energy consumption, air pollution and fuel usage rail is one of the most efficient modes of transportation available.

Motivated by economics as well as public opinion, each year the railroad industry deploys new technology that is more fuel efficient and “green”. By expanding the use of distributed power (locating locomotives in the middle of longer trains), deploying efficient “genset” locomotives, reducing idling, and ensuring optimal utilization of cars, rail today is 101% more fuel-efficient than it was 30 years ago (Figure 9<sup>25</sup>). While not all freight is suitable to transfer to rail, those that do not require special handling and are traveling over 500 miles often can be carried by rail. By shifting more goods to rail and utilizing an intermodal approach that maximizes efficiency, the country can improve the environmental, decrease our dependency on foreign fuels and increase the quality of life for all citizens.



**Figure 9. Freight Rail Fuel Efficiency Since 1980 (Ton-Miles per Gallon)**

<sup>23</sup> Source: Association of American Railroads, <https://www.aar.org/keyissues/Pages/Energy-And-Environment.aspx>  
Note that there are factors that can affect these estimates, such as how long older (more polluting) locomotives are kept in service, the pace of regulation and technology adoption for truck engine pollution controls, the calculation and assumption of back-haul loads and so on.

<sup>24</sup> Source: “Urban Mobility Information: 2005 Annual Urban Mobility Report,” Texas Transportation Institute  
<http://mobility.tamu.edu/ums/report>.

<sup>25</sup> Source: Association of American Railroads, <https://www.aar.org/keyissues/Documents/Background-Papers/The-Environmental-Benefits-of-Rail.pdf>

### 3.6.2 Truck-Related Environmental and Economic Impacts

#### *Congestion and Related Impacts*

Freight volumes are expected to increase by 45% from 2012 to 2040. Yet even now, Hartford, CT (I-84 at I-91) ranks 18<sup>th</sup> in the nation for 2012 congestion at “freight significant locations.” Trucks during the peak travel at an average of 38 MPH.<sup>26</sup> For every retained ton-mile of freight rail shipment of goods, and every diversion from truck to rail, the need for roadway maintenance and new construction is reduced. Not only does this have a fiscal impact on tight state and federal government budgets, but there are also environmental costs that will also be avoided or reduced. These include the lower rail-related pollutants and greenhouse gas referenced above, as well as less impervious (roadway) surface area, which hastens erosion, washes chemicals and toxins into waterways, creates heat island effects, alters the water temperature and prevents the filtration of water into the ground to recharge water supplies. Railroads use significantly less impervious surface per mile of track than roads. Switching to rail freight will also reduce the congestion on the state’s overcrowded highways, allowing for more fuel-efficient driving patterns and less travel time and fewer truck-passenger car accidents for area travelers.

### 3.6.3 Brownfields – an Opportunity for Freight Rail Development in the CCRS Corridor

A brownfield is defined as “real property, the expansion, redevelopment, or reuse of which may be complicated by the presence or potential presence of a hazardous substance, pollutant, or contaminant.”<sup>27</sup> Nationwide there are over 500,000 brownfields. The remediation of these lands would allow for the redevelopment of existing infrastructure and services which can save millions in new public dollar investments while still adding jobs and aiding the economy. In the early 2000s, the Federal highway Administration (FHWA) funded research into understanding how and where transportation can foster brownfield redevelopment.

In 2003 the North Jersey Transportation Planning Authority conducted a study funded by FHWA’s Transportation and Community and System Preservation Pilot Program, to analyze the potential for using brownfields located along railways to develop warehouse, shipping activities, and industrial clusters<sup>28</sup>. Based on New Jersey’s expectations for substantial growth in freight transport and freight-related development on abandoned industrial sites, brownfield development was identified as one way to handle the increased freight. Through market analysis and case studies the study found that sites greater than 5.5 acres provided the potential for brownfield redevelopment.

Brownfield redevelopment at rail-served sites (or rail-adjacent sites) can strengthen the region’s employment base, decrease the loss of open space through siting warehouse and distribution centers on the fringe, and decrease truck traffic on already congested roads. The New Jersey study also noted that, although the region has an opportunity to capitalize on brownfields, obstacles such as high remediation costs, lack of government coordination, and costly and lengthy environmental review and permitting can deter the desired redevelopment of these sites.

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<sup>26</sup> FHWA Freight Facts and Figures 2013, Table 3-14, Top 25 Congested Freight-Significant Locations: 2012, [http://ops.fhwa.dot.gov/freight/freight\\_analysis/nat\\_freight\\_stats/docs/13factsfigures/table3\\_14.htm](http://ops.fhwa.dot.gov/freight/freight_analysis/nat_freight_stats/docs/13factsfigures/table3_14.htm)

<sup>27</sup> Source: Environmental Protection Agency <http://www.epa.gov/swerosps/bf/overview/glossary.htm>

<sup>28</sup> Source: North Jersey Transportation Planning Authority, [http://transportation.njit.edu/nctip/final\\_report/BrownfieldsReport.pdf](http://transportation.njit.edu/nctip/final_report/BrownfieldsReport.pdf)

These conditions prevail in many states, and have reduced the potential that brownfields re-utilization could have on employment and the built environment.

Connecticut has an active brownfield program administered through the Connecticut Office of Brownfield Remediation and Development, which conducts remediation programs and provides standards and funding to ensure the safe reuse of contaminated sites. The state's priority mapping of state and municipally owned brownfields in Connecticut shows four brownfields in the corridor<sup>29</sup>. In addition, there are 12 privately owned brownfield sites within the corridor communities. In total there are 45.5 acres of identified brownfield land in the corridor communities that range in size from 0.64 acres to 8.3 acres<sup>30</sup>. The majority of sites are located in Bristol or Berlin, and many were once or could be rail-served.

### **3.7 Freight Rail in Connecticut and the Northeast US**

Freight railroad infrastructure is primarily privately owned and has not historically relied on public subsidies to own, build, and/or maintain its infrastructure, unlike highways, airways and waterways, though public-private partnering is becoming more common nationally. Many state departments of transportation, including CTDOT, support freight railroads through grant programs. Some large infrastructure projects (like the Alameda Corridor that put railroads serving Southern California ports in a trough to increase speeds and reconnect communities) are so large, and provide such a broad range of benefits, that they both justify and require public-private partnerships.

With the projected increase in freight and rail freight growth at the national and regional level, this places Connecticut in a position to connect via freight rail to larger growing markets via the Patriot Corridor, the Crescent Corridor and, once improvements have been implemented, to the Knowledge Corridor.

The history of Connecticut's railroads parallel's the nation's: booming success in the early 1900s, followed by a steady decline due to the Great Depression, over-regulation and the advent of the trucking industry. By the 1960s and 70s, many railway companies were facing bankruptcy, and as an initial response Congress passed the Railroad Passenger Service Act (1970) establishing Amtrak and removing the pressure for railroads to provide unprofitable intercity passenger service. Three years later, the Regional Rail Reorganization Act (3R Act) was passed, which established the Local Rail Service Assistance Program and provided financial assistance to preserve rail freight service in the Northeast and Midwest. By the late 1970s, funding began to diminish, and in order to preserve and improve freight rail service the Connecticut General Assembly amended the Railroad Tax Exemption status. This allowed freight railroad operators to substitute state taxes for equivalent amounts of capital investment in Connecticut's railways. Relevant to this study is the focus on investment in light-density lines.

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<sup>29</sup> Connecticut Office of Brownfield Remediation and Development,  
<http://www.ctbrownfields.gov/ctbrownfields/site/default.asp>

<sup>30</sup> Connecticut Brownfield Redevelopment Authority <http://www.ctcda.com/Sites/counties.asp>

These efforts, in conjunction with the Staggers Act of 1980 that deregulated the freight rail industry at the national scale, allowed freight rail to recover its competitiveness with other freight modes.<sup>31</sup>

### **3.8 Current Rail Planning and Regulatory Environment**

Even as a new state rail plan is under development, the vision expressed within the 2012 Connecticut State Rail Plan calls for a passenger and freight systems that advocates for smart growth, encourages mobility, promotes regional connectivity, decrease the dependency on the highway and aviation systems, reduced energy consumption and promotes economic development. The plan outlines the goals, objectives and strategies for Connecticut freight and passenger transport, which will position the state as a competitor in the regional and global economy.

The Rail Plan identifies four goals for freight rail, consistent with the department's mission, values and vision:

1. Increase freight rail usage by 20 percent to reduce truck traffic and energy consumption.
2. Promote port connectivity by removing existing obstacles and through capital infrastructure improvements.
3. Explore alternative freight corridor options.
4. Identify public funding resources.

To support these goals the State Rail Plan establishes the following objectives:

1. Develop a strategic plan for rail freight movements.
2. Form partnerships with Class I railroads and short haul operators.
3. Partner with northeast states to develop a vision for rail freight.
4. Support a rail freight investment program.
5. Continue to support improvements at public Highway/Rail Grade Crossings to maintain safe conditions.
6. Develop a new Connecticut Railroad Bridges Management Program to evaluate bridges' routes to determine the feasibility of loading rail cars to the 286,000 pound full potential in Connecticut to promote economic growth, reduce fuel use, and reduce truck traffic on the state's highway system.
7. Support efforts to increase clearances to 19'-6" or above on rail lines not encumbered by overhead catenary wire to permit the movement of larger cars in Connecticut that would allow a railroad with the ability to increase service or capture additional markets.
8. Revitalize intermodal facilities/and inland ports in the state to serve the rapidly growing container segment of rail traffic that will help remove long-haul trucks from highways and deliver products to consumers faster.

It is clear from these goals and objectives that Connecticut wishes to promote rail freight transport through improving infrastructure to a "state of good repair," which will help open up connections to regional and national markets. To achieve this, several initiatives and long and near term investment strategies have been identified. Initiatives include addressing the weight restriction issues, upgrading the New Haven-Hartford-Springfield line to support double-stack

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<sup>31</sup> Source: Connecticut State Rail Plan 2012-2016, <http://www.ct.gov/dot/cwp/view.asp?a=1386&q=437648>

containers, promoting the State Pier Needs and Deficiencies Planning Study that looks at opportunities at the New London deep-water port and adjoining rail yard, and developing the I-95 New Haven Harbor Crossing Corridor Improvement which will restore the rail link to the Port of New Haven—the latter which is now under way through a TIGER Grant.

A five-point action plan was developed by the department to address the needs of the state in a cost-effective manner (Figure 10<sup>32</sup>). Bringing the current system up to a state-of-good-repair is identified as the highest priority. Preservation in conjunction with system modification and modernization will improve safety for operators, passengers, the general public and industry partners, producing public and private benefits.



**Figure 10. Connecticut's Strategic Five-Point Freight Rail Action Plan**

Through system productivity, efficiency between modes will be maximized with new technologies and coordination efforts. Promoting rail freight will increase the quality of life to the state's residents through positive impacts on the economy and environment. Strategic capital investments will improve the efficiency of the systems, expand mobility and place Connecticut in a position to integrate into the regional and national railway system.

Based on the Five Point Strategic Action investment strategies were developed. Those that pertain to freight rail include upgrading deteriorating infrastructure before adding new, correct hazardous or potentially hazardous situations, provide for routine maintenance, prioritize and undertake capital projects based on those for which funding has been authorized, develop a rail freight plan in Connecticut, explore opportunities for public-private partnerships. The five point action plan addresses strategies which the department has translated into near-term action items which include collaborating with freight railroads, growing the interconnectivity of the state rail freight system, capital investments, strengthening modal interchange, and increasing the overall system capacity.

<sup>32</sup> Source: Connecticut State Rail Plan, 2012

## **3.9 Federal Government Assistance to Freight Rail**

### **3.9.1 Railroad Rehabilitation and Improvement Financing (RRIF)**

The most important source of federal assistance to railroads in recent years has been the Railroad Rehabilitation and Improvement Financing (RRIF) program of direct loans or loan guarantees. Since its inception in 2002, and over many program modifications through 2011, no Connecticut Class I or II railroad has participated in this program, which has provided these smaller operators nearly \$700 million in assistance during that time.<sup>33</sup>

The federal government has been using tax policy to help Class II and III railroads invest in infrastructure improvements. Section 45G (26 U.S.C. 45G) provided a tax credit, capped at \$3,500 per mile, for railroad maintenance of track and structures. The credit, created in 2004 and subsequently renewed in various bills, expired at the end of calendar year 2011. There is support and pending legislation (still in committees) in the Senate and the House of Representatives for a renewal of this tax credit, which has helped the short lines and regional railroads invest more than \$1.2 billion since 2005.<sup>34</sup>

### **3.9.2 TIGER Grants (Transportation Investment Generating Economic Recovery)**

As part of the American Recovery and Reinvestment Act of 2009 (ARRA), the USDOT initiated a competitive discretionary grant program – the so-called TIGER grants, designed to modernize transportation infrastructure. Five U.S. DOT appropriations have provided a total of \$4.2 billion nationally, of which approximately \$810 million has benefited freight rail projects. Of this amount, short line railroads have received more than \$270 million to improve track, repair bridges and add capacity.<sup>35</sup>

The State of Connecticut (CTDOT) has been aggressively and successfully pursuing the competitively awarded TIGER Discretionary Grants, in recognition of the need to modernize the state's railroads, remove weight restrictions, and restore a state of good repair. Freight railroads, which are often direct beneficiaries and partners in these funding grants, applaud CTDOT's efforts and encourage ongoing collaboration to find funding adequate to the statewide freight rail system need. The recent (2014) \$8.2 million TIGER grant awarded to the New England Central Railroad (NECR) will restore and upgrade 55 miles of NECR track in eastern Connecticut to 286,000 pound weight standards.

## **3.10 State Government Assistance to Freight Rail**

### **3.10.1 Connecticut Gross Earnings Tax Exemption Program**

The Gross Earnings Tax Exemption Program continues to provide tax relief (in the form of reductions of calculated gross earnings) for freight railroads who make qualifying investments in modernizing and maintaining their infrastructure. The exemption, codified as CGS Section 13b-226 et seq., yields tax exemptions that range from one thousand to several hundred thousand

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<sup>33</sup> DOT/FRA Report to Congress (October 2014), *Op Cit*, pp. 10-11.

<sup>34</sup> DOT/FRA Report to Congress (October 2014), *Op Cit*, pp. 17-18.

<sup>35</sup> *Ibid.*, p. 16

dollars per year, for participating railroads. Note that Amtrak and Metro North Railroad have their own separate tax exemption legislation, and do not participate in this program.<sup>36</sup>

### **3.10.2 Rail Preservation and Improvement Program**

This program evolved as federal assistance for the LRSA Program (Local Rail Service Assistance program, established by the 3R Act) began to wane in the late 1970s. Notably, Guilford Transportation Industries received \$2.5 million under this program to rehabilitate track from Waterbury to Berlin, approximately 10 years ago.<sup>37</sup> Pan Am Southern has suggested that this state investment program be reviewed and revised.

### **3.10.3 Rail Freight Infrastructure Program (RFIP)**

In accordance with CGS Section 13b-236, CTDOT periodically solicits freight rail projects for this competitive grant program, the funding of which is subject to Connecticut General Assembly authorization of available funds.

In 2013, more than \$11 million in funding was directed to upgrade and repair infrastructure on six Connecticut freight railroads as described below.<sup>38</sup> CTDOT will review the results from this round of funding prior to the next solicitation cycle.

- **Central New England Railroad** was awarded \$2,464,300 for track and grade crossing signal infrastructure improvements installed between Hartford and Bloomfield on the state-owned Griffin Line. Grade crossing warning devices will be installed, and surface and track improvements will be made at the Wintonbury Avenue and Mills Lane crossings in Bloomfield.
- **New England Central Railroad** was awarded \$3,579,230 to upgrade their mainline New London and the Connecticut/Massachusetts state line to accommodate 286,000 pound rail cars. The project includes upgrading switches, making repairs to the Norwich Tunnel, and rehabilitating nine at-grade crossings.
- **Naugatuck Railroad** was awarded \$1,649,936 on the state-owned Torrington Line between Waterbury and Torrington. Naugatuck Railroad will replace ties and worn rails, and improve a rail crossing at Frost Bridge Road on Route 262 in Watertown.
- **The Housatonic Railroad** was awarded \$1,625,175 on the state-owned Berkshire Line between the Town of Kent and Cornwall to replace 5.5 miles of 140 pound welded rail including the installation 11,000 crossties, and surface the track structure.
- **Connecticut Southern Railroad** was awarded \$225,000 for the installation of a Freight siding switch/turnout at the Nicolock industries in North Haven on the New Haven Hartford & Springfield Line.
- **The Providence & Worcester Railroad** was awarded \$758,395 to rehabilitate 26.5 miles of the Norwich Branch Line between from Milepost 28.5, in Plainfield, CT to Milepost 54, in Thompson, CT (CT/MA State Line). Construction started on September

<sup>36</sup> [http://www.ct.gov/dot/lib/dot/documents/dpolicy/existingsystems\\_20141016.pdf](http://www.ct.gov/dot/lib/dot/documents/dpolicy/existingsystems_20141016.pdf), pp. 81-82

<sup>37</sup> Connecticut State Rail Plan (2012), p. 168.

<sup>38</sup> Source: CTDOT communication, and <http://www.governor.ct.gov/malloy/cwp/view.asp?A=4010&Q=525772>

18, 2014, which consists with the replacement of 7,800 new wood crossties, 8,000 tons of stone ballast, and re-surface of the track structure. This improvement will maintain a state of good repair.

### **3.11 Coalition of Northeast Governors (CONEG)**

Established in 1976, this coalition of seven northeastern state governors (Connecticut, Vermont, New York, New Hampshire, Rhode Island, Massachusetts and Maine) continues to promote solutions to regional issues, and, relevant to this study, have advocated for high-speed intercity rail and freight rail development. CONEG's current vision calls for investment to restore and expand intercity passenger rail as well as completing projects necessary to bringing the freight rail network to a state of good repair and improve rail safety and efficiency in the northeast.<sup>39</sup> By coordinating strategies and combining efforts, the states' executive leadership has been effective in encouraging federal support, and in attracting and leveraging federal funding necessary to deliver projects and ensure that state agencies have access to necessary rail and freight expertise to develop and implement coordinated infrastructure and service plans.<sup>40</sup>

Although CONEG is focused primarily on passenger rail connections, the importance of freight rail in addressing roadway congestion, economic development and environmental sustainability in the post-recession era is widely acknowledged. With the understanding that passenger and freight rail issues and needs are related, the New England Vision for High Speed and Intercity Passenger Rail is presented in Figure 11<sup>41</sup>.

### **3.12 Connecticut Regional Councils of Government in CCRS Study Area**

The State of Connecticut's Office of Policy and Management recently completed an analysis of the state's planning regions, and recommended a reduction from the original 15 to nine new planning regions.<sup>42</sup> In the CCRS study area, the six towns along the PAS Line are members of the following planning regions: the Naugatuck Valley Planning Region (Waterbury, Plymouth and Bristol) and Capitol Planning Region (Plainville, New Britain and Berlin).

During this transitional period for these planning institutions, there may be some level of role adjustments and changes in focus, in addition to new opportunities for government and freight railroad collaboration and cooperation. Jurisdictions along railroads are typically interested in safety, economic development, land use impacts and opportunities, and connectivity across the rail line, and in some areas, potential conflicts with passenger rail. If corridor implementation stemming from this study requires local agency action, these new bodies will need to be engaged.

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<sup>39</sup> [http://www.massdot.state.ma.us/portals/20/docs/newengland\\_hsr\\_vision.pdf](http://www.massdot.state.ma.us/portals/20/docs/newengland_hsr_vision.pdf)

<sup>40</sup> CONEG Testimony to U.S. House of Representatives Committee on Appropriations Subcommittee on Transportation, Housing and Urban Development, and Related Agencies Regarding FY2015 Appropriations for Transportation Programs, <http://www.coneg.org/reports/correspondence/transportation/2014-04-11.pdf>

<sup>41</sup> P. 2, [http://www.massdot.state.ma.us/portals/20/docs/newengland\\_hsr\\_vision.pdf](http://www.massdot.state.ma.us/portals/20/docs/newengland_hsr_vision.pdf)

<sup>42</sup> OPM Redesignated Planning Regions, [http://www.ct.gov/opm/lib/opm/igp/rpos/regions\\_new\\_color.pdf](http://www.ct.gov/opm/lib/opm/igp/rpos/regions_new_color.pdf)



Figure 11. New England Vision for High Speed and Intercity Passenger Rail

## Chapter 4. Economic Trends and Goods Movement

### 4.1 Globalized Freight Logistics and Supply Chains

#### 4.1.1 Just-in-time Freight Business Model

Since the 1990s, just-in-time (JIT) delivery of raw materials and finished goods has been adopted as a global strategy and has reshaped the US freight network, along with the built environment and domestic business practices. As inventory drops, and manufacturers use our roadways, ports and sea-lanes, airports and railroads as moving warehouses, reliable transportation flows to industry and retailers has become a critical factor for domestic businesses.

Further, even as the state's industry base diminishes due to the change in ways goods are manufactured, shipped and received, remaining sites are getting smaller, thus requiring more frequent small deliveries which is better suited to trucking. The rail industry has had to innovate to compete successfully in this environment.

#### 4.1.2 Diversifying Product Locations – Made in America?

Now that the off-shoring and outsourcing trend has long-since peaked, rising labor and energy costs, along with increasing off-shore production and shipping costs, are beginning to chip away at the decades-long preference of transnational corporations for off-shoring manufacturing operations and their important family-wage jobs. As this trend begins to reverse itself, or at least become less pronounced, the potential for North American manufacturing revitalization increases. Observers caution that re-shoring often is really “near-shoring” – moving operations to Canada or Mexico.

Some of Norfolk Southern's current business is from re-shored Mexican activity that results in new freight business from Mexico to the eastern U.S.<sup>43</sup> Some re-shoring may also happen as China seeks investments for its foreign reserves held in dollars.

In 2012, Massachusetts Institute of Technology researchers reported that of 198 companies responding to a survey, 15% of them stated they are “definitively” planning to re-shore activities to the U.S. The authors have no data about what these “activities” might be; only that anecdotal evidence suggests many of these jobs may be low level assembly operations<sup>44</sup>. Re-shoring decisions were being made on the following basis:

- |    |                                      |         |
|----|--------------------------------------|---------|
| 1. | Time-to-market                       | (73.7%) |
| 2. | Cost reductions                      | (63.9%) |
| 3. | Product quality                      | (62.2%) |
| 4. | More control                         | (56.8%) |
| 5. | Hidden supply chain management costs | (51.4%) |
| 6. | Protect IP                           | (48.5%) |

<sup>43</sup> Biz NS, Volume 5, Issue 1, January-February 2013, accessed at [http://www.nscorp.com/content/dam/nscorp/bizns/archive/BizNS\\_Vol5\\_Issue1.pdf](http://www.nscorp.com/content/dam/nscorp/bizns/archive/BizNS_Vol5_Issue1.pdf)

<sup>44</sup> MIT Forum for Supply Chain Innovation 2012 Annual Re-Shoring Report [http://supplychain.mit.edu/wp-content/uploads/2014/10/mit\\_forum\\_2012\\_annual\\_u\\_s\\_reshoring\\_report.pdf](http://supplychain.mit.edu/wp-content/uploads/2014/10/mit_forum_2012_annual_u_s_reshoring_report.pdf)

Of note for this report is the list of the top five actions, in descending order of importance, which the U.S. government can take to entice U.S. companies to re-shore:<sup>45</sup>

- Corporate tax reduction
- Tax credits
- Research and development incentives
- Provide better education/training for required skills
- **Provide better infrastructure (mentioned by 38% of companies responding to the survey) (*emphasis added*)**

## 4.2 How Railroads View the World

When public sector agencies seek to form effective partnerships with railroads, it is useful to review some key differences in outlook between the two. These differences of viewpoint and emphasis are explored in this section.

### 4.2.1 Railroads Don't Like Surprises

Public agencies should bring affected railroad operators into any project or policy development process that could impact railroad operations very early in that process.

### 4.2.2 Rail's Shorter Planning Cycles

It is important to take into account the different time horizons that are used by public agencies as compared with businesses in general, and railroads in particular. State DOTs and regional planning agencies or metropolitan planning organizations prefer to and are required by statute to look at 20-year (and more) frameworks for investments, growth and traffic projections, and other resource needs. Agencies require a long lead time to prepare comprehensive technical evaluations, thoroughly engage, educate and involve the public and elected officials, make investment decisions, develop and program state funds, and phase projects for implementation.

Railroads, and the businesses that make up their customer base, often look at current conditions and three to five years ahead, in order to respond quickly to market needs. Public sector staff and decision-makers will improve relationships with railroads by understanding this. There is often little point in asking a railroad about their 10-year plan. Conversely, railroads have had to learn to be patient with the (often lengthy) public sector decision-making process. For both, knowing when, where and how to engage each other's internal planning and decision-making processes is critical to establishing good relationships and partnerships.

### 4.2.3 Safety Really is First

A railroad's emphasis on safety is also something that government agency staff must also appreciate. The safety culture at each Class I and most of the regional railroads is a point of pride, as well as a reflection of concern about liability and costs. Most rail yards feature a sign showing the number of days since the last accident, and both unions and railroad management take safety training, equipment and protocols very seriously. When a railroad examines service changes, it will look at the number of grade crossings and the potential for trespassing, as well as infrastructural issues that support safe travel, such as sufficient spacing between tracks in case of derailment, track condition and separation or safe operation of passenger and freight trains

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<sup>45</sup> Ibid., p. 12.

sharing the same track. For public agencies, educational programs such as Operation Safety, funding of crossing protection upgrades, and consistent enforcement of trespassing laws improve public safety and the railroads' confidence in state and local jurisdictions.

#### 4.2.4 Public Stake in Freight Rail Changes Government-Rail Relationships

Notwithstanding original land grants, railroads have historically invested in their network out of revenues or other private funds, based on internal business calculations that have not been widely shared with the public or with government regulators. Recently, the Class I railroads have consistently invested more than \$20 billion annually to add capacity and improve service reliability along their major line haul routes, and in some key congested hubs.

For nearly two decades, the Class I's have invested based on a unit-train business model, and this has left some regions with rail operators who have lacked sufficient resources to maintain good access to the national network. Over the same period, however, states and the federal government have looked increasingly to the freight rail network as a source of economic development, a means to relieve the interstates and local highways from truck-related congestion, and a more fuel-efficient way to move the nation's goods. Additionally, freight railroads are now frequently viewed as potential partners in revitalized passenger rail service where track sharing is required.

Thus, many states have formal grant and economic development programs that make public funds available to the freight rail network, under a variety of circumstances. While in the past, railroads might have foregone such funding opportunities, in order to avoid the associated government red tape, many railroads now realize that if they don't get the money or other consideration on offer, their rail competitor or a competing mode (highways, typically) may receive the benefits and associated competitive advantage.

This situation has fostered a closer and more congenial relationship between government and railroads and offers the possibility for more transparency from the railroads as public investments in private infrastructure are identified, evaluated and implemented. As a response to this and other evolving factors (e.g., increasing environmental and equity concerns along freight routes for all modes), most railroads now have staff dedicated to public and/or government relations, in addition to customer service.

#### 4.2.5 Trackage and Haulage Rights Expand a Railroad's Network Reach

Railroads use each other's lines in order to access wider markets, and have developed several accounting and billing procedures to share track and revenues from customers using more than one railroad's lines. In the "joint rate and route" arrangement, two railroads agree on one rate for shipping from the destination on Railroad A's line to a destination on Railroad B's line. The shipper pays a single invoice, and the railroads share the revenue according to the arrangements they have made between themselves. Each railroad provides crews and equipment on its own line, and is responsible for any loss or damage to freight under its control.<sup>46</sup>

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<sup>46</sup> Trackage and haulage rights, Michael W. Blaszk, Trains Magazine, May 1, 2006. Accessible at <http://trn.trains.com/railroads/abcs-of-railroading/2006/05/trackage-and-haulage-rights>

A second type of agreement is “trackage rights” wherein the tenant railroad, operating on another railroad’s line, is fully responsible for the freight from origin to destination. The tenant railroad uses its own crews and locomotives, and pays for the right to run on the owner railroad’s track—typically paying a fee stated in terms of cent per car-mile or ton-mile.

Trackage rights pose several problems for both the railroads and shippers. Since, post-Staggers Act, the STB regulates trackage rights agreements, railroads’ previously private business has become public record. Further, labor protections accrue to railroad employees if their jobs are lost because of business slowdowns stemming from trackage rights agreements. For shippers, trackage rights means having to negotiate with more than one railroad.

In order to avoid the pitfalls of trackage rights, many railroads have turned to haulage rights, which so far have been deemed beyond STB jurisdiction through several court decisions. The lack of transparency associated with these commercial agreements creates confusion about which railroads are serving which customers over which lines, for those trying to examine costs and operational factors from the outside.<sup>47</sup>

### **4.3 Modal Competition for Goods Movement in the Study Area**

The primary competing freight modes for purposes of this study are rail and truck. The growth of business and attraction to rail depends on the cost of shipping, end user costs, quality of service and market size factors. With deregulation in 1980, rail became a larger competitor in the freight market, no longer subject to government market constraints. Railroads were free to establish rates and many saw significant gains. In the northeast the newly established PAS and Patriot Corridor will open up New England to the national market generating millions in potential economic impacts.

The challenge of a mismatch of rail service to current and potential shipper needs is complex, and not easily solved. “In many areas, the network is designed to serve customers who no longer exist or who no longer use rail; in other areas, the rail network does not well serve the traffic that does exist.”<sup>48</sup> Bringing the rail network into alignment with current and future market service and handling requirements is sometimes better addressed through public-private partnerships between willing participants in modernization.

### **4.4 How Shippers View the World**

Earlier in this chapter, we examined how railroads approach their main business – moving goods through the rail network, which is becoming increasingly multimodal and intermodal. In this section, the focus is primarily on general motivations of shippers; Chapter 4 of this report identifies more specific individual business needs that largely echo the general concerns discussed below.

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<sup>47</sup> Trackage and haulage rights, Michael W. Blaszak, Trains Magazine, May 1, 2006. Accessible at <http://trn.trains.com/railroads/abcs-of-railroading/2006/05/trackage-and-haulage-rights>

<sup>48</sup> Rail Freight Solutions to Roadway Congestion—Final Report and Guidebook, NCHRP Report 586, p.6 [http://onlinepubs.trb.org/onlinepubs/nchrp/nchrp\\_rpt\\_586.pdf](http://onlinepubs.trb.org/onlinepubs/nchrp/nchrp_rpt_586.pdf)

#### **4.4.1 Time and Money**

For shippers who are fully integrated into a just-in-time low-inventory logistics model, speed of delivery is often equally or more important to their business than is reliable service. This means that, for the most part, rail service on lines like the PAS Line is simply not going to be attractive to a large portion of businesses. Even shippers using truck-to-rail intermodal service will demand that the railroad meet the truck on schedule at both ends of the trip.

#### **4.4.2 Service and Cost**

What is it that businesses that need to receive and send goods want? Even for freight-heavy businesses, shipping is not their main purpose; it is a cost of doing business, and it either adds to or detracts from their ability to function and serve their own customer base. Cheap, fast, reliable, secure—these are the features of shipping arrangements that attract businesses, whether rail-served or not. Manufacturers want reliable access to the best and/or least expensive raw materials or other inputs, and wish to gain access to the widest possible relevant markets at the lowest cost. If the shipper is also a business with commuting employees, high quality passenger rail service might also be an attraction for those located on a rail-served corridor.

The conditions under which a shipper will choose truck or rail to receive or send materials or finished products continue to be the subject of much research. Some investigators note that, after decades of rail network reorganization, the remaining rail shippers on low-density carload rail lines like the PAS Line are, by definition, able to tolerate the level of service that their railroad operator provides. This study, however, seeks to determine whether the local situation is hovering around “tolerance of” or whether it is or can be moved toward “attraction to” the rail freight alternative to trucking.<sup>49</sup> For carload rail customers, this means timely delivery and pickup of cars, immediate switching, equipment availability and, if rail access is indirect, satisfactory arrangements for transloading.

#### **4.4.3 Switching Modes Can be Costly**

Reorganizing or reconstructing buildings, building or restoring tracks, docks and yards, and changing shipping practices, billing procedures and relationships are all additional costs that can give pause to a potential new rail customer. The ability to maintain service while accomplishing such a reorientation is also a potential problem.

### **4.5 The Customer Meets the Railroad – Carload and General Freight Service on Lower-Density Lines**

Carload service has been virtually abandoned by the Class I’s in favor of more profitable unit and intermodal trains. Although regional railroads like PAS have increasingly been filling the hole left by the Class I’s, they are more often underfunded, resulting in deferred maintenance, inadequate staffing and crews, use of older equipment and associated lapses in service reliability. Each instance of unreliability is felt by shippers, and some will drop rail service after one or more delivery failure, further eroding revenues and the ability of the regional railroads to upgrade its infrastructure.

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<sup>49</sup> Rail Freight Solutions to Roadway Congestion—Final Report and Guidebook, NCHRP Report 586, p.6 [http://onlinepubs.trb.org/onlinepubs/nchrp/nchrp\\_rpt\\_586.pdf](http://onlinepubs.trb.org/onlinepubs/nchrp/nchrp_rpt_586.pdf) Chapter 4.

In recent years, smaller regional and local railroads have been acquired by larger holding companies, which have the resources to provide near Class I investment and management. Or, as in the case of PAS, they are partnering with a Class I in specific regions to mutual benefit.

#### **4.6 The Rise of Intermodal Freight: Trucks and Trains are Collaborators as well as Competitors**

In head-on competition, the Class I's have captured a good share of large, uniform loads of long-distance shipments, and continue to make gains (which are growing more slowly over time) in the so-called intermodal business (i.e., truck trailers or containers on rail) as appropriate markets emerge. Shippers on branch lines who already have a rail connection, such as those interviewed for this report, are also natural candidates for increased rail utilization.

Yet the gold standard in freight delivery remains the level of service provided by a single trucker who offers door-to-door pickup and delivery. For shipments that must meet narrow delivery windows, trucks are more reliable, even when considering urban congestion. Cost of delay and missed deliveries can outweigh the advantage that rail would otherwise have on cost per ton-mile.

Given this condition, rail freight has found its niche for the carload business characteristic of the CCRS study corridor in the heavy commodities that travel more than 500 miles. Carload rates, in order to be attractive, must compensate for added travel time, reliability costs, requirement for larger shipments and other inventory carrying costs associated with rail service.

Even for businesses with direct rail access, most rail trips involve a truck at some point. Using the unique advantages of each mode appropriately makes sense, and is often the best approach to incrementally move roadway freight to the railroad. Thus intermodal rail is a quite natural progression that delivers a winning combination of the best of truck and rail cost and service characteristics is at the foundation of the rise and dominance of intermodal rail growth, which includes a truck (container) trip at one or both ends. This mode gives shippers door-to-door delivery options along with line-haul rail rates. At the corridor scale of this project, an off-line intermodal facility that could be used to deliver carloads to PAS is a candidate for consideration.

##### **4.6.1 Cost and reliability of truck versus rail**

From a shipper's perspective, costs for truck or rail include both the nominal shipping rates and various cost of delay. Rail is not always more fuel-efficient and is certainly not always cheaper than trucking. Light density lines, intensive switching operations and short train sets reduce the fuel and cost effectiveness of rail relative to truck. They also increase total transit time.

Thus, as congestion –whether on the rail network or the highway system-- lowers average speeds, increases accident potential and amplifies problems with reliability and time of delivery, some of their respective modal advantages can disappear. Chokepoints and bottlenecks can be addressed, but at a cost for either private railroads or federal, state and local governments. Although organized and persuasive, it is arguable that trucks have less control over the mostly publicly funded investment decisions that affect their ability to perform than do railroads on the mostly privately funded rail network.

Figure 12<sup>50</sup> shows the relationship between average truck and rail freight revenues per ton-mile since 1990. Truck data is not available after 2007.

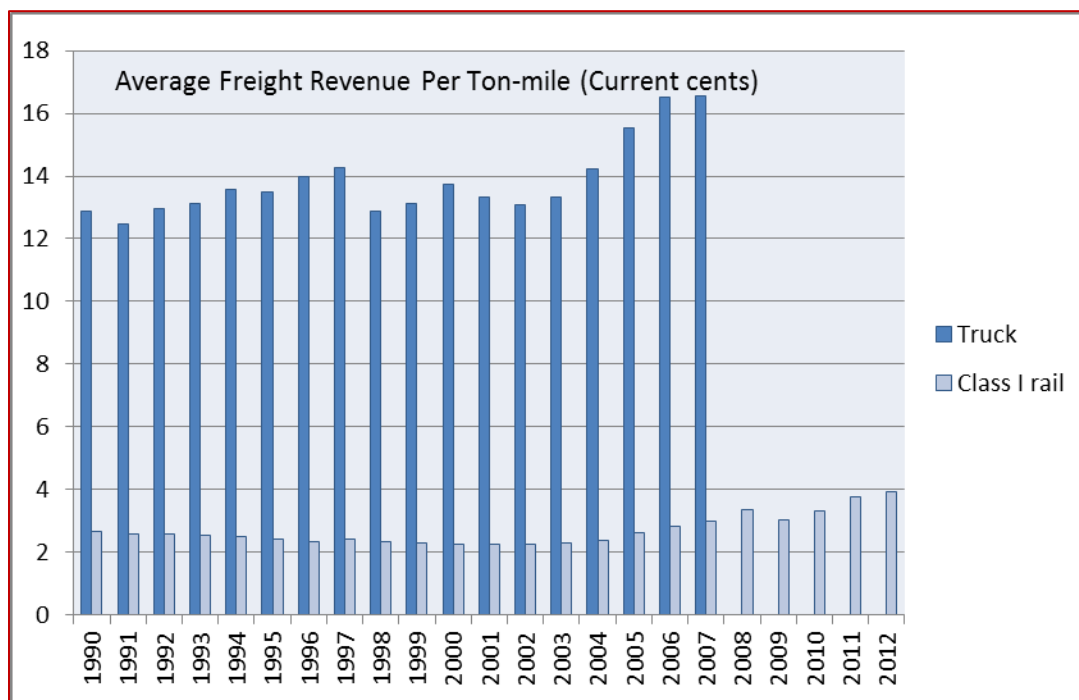


Figure 12. Average Freight Revenue per Ton-Mile (Trucks, Class I Rail)

Within the CCRS Study Area, some customers interviewed for this project noted increases in rates and fuel surcharges. Norfolk Southern rates for domestic intermodal traffic, for local and NS originated interline business will increase 5-7% or greater, effective 2015, depending on rate category, lane and customer.<sup>51</sup>

#### 4.7 Value of Maintaining a Viable Freight Rail Option in the CCRS Corridor

A balanced transportation system accommodates all passenger and freight travel through various modes for a given geography. Within the rail mode, especially as it applies to Connecticut, state economic interests are served by allowing low-density areas of industrial, manufacturing and resource extraction to retain and improve access to the national rail network, via regional and short line railroads. Locally, community vitality, corridor jobs, redundancy of travel modes all depend upon investment in this line to support operations of a customer-service oriented railroad.

There is value in maintaining modal choice for shippers, if those choices are reasonably equivalent on service and cost. Such competition between modes is critical to keeping costs down and service quality high.

<sup>50</sup> USDOT Bureau of Transportation Statistics, [http://www.rita.dot.gov/bts/sites/rita.dot.gov/bts/files/publications/national\\_transportation\\_statistics/html/table\\_03\\_2\\_1.html](http://www.rita.dot.gov/bts/sites/rita.dot.gov/bts/files/publications/national_transportation_statistics/html/table_03_2_1.html)

<sup>51</sup> Norfolk Southern Shipping news and alerts, 2014 <http://www.nscorp.com/content/nscorp/en/ship-with-norfolk-southern/shipping-tools/shipping-news-and-alerts/domestic-pricingnewsfall2014winter2015priceincreases.html>

If freight rail in this or other parts of Connecticut do not retain and increase their share of freight movements, the result is inevitably increased congestion and roadway damage on parallel highways, increase in shipping costs, more greenhouse gas emissions, and potential loss or relocation of businesses. Every transportation mode has costs that are externalized – i.e., not accounted for in the private market. One researcher<sup>52</sup> estimates that the social costs of these impacts for rail (2001) range from 0.24 to 0.25 cents per ton-mile, while those for trucks are about 1.11 cents per ton-mile.

On the positive side, the US Department of Commerce states that “every dollar spent on investments in our freight railroads – tracks, equipment, locomotives, and bridges -yields \$3 in economic output. Additionally each \$1 billion of rail investment creates 20,000 jobs”<sup>53</sup>. Today the railroad industry employs 180,000 employees and is among the top nationwide for compensation to workers. The average freight railroad worker in 2011 earned 38% more (including wages and benefits) than the average full-time employee in the United States<sup>54</sup>. On top of the 180,000 direct jobs furnished by the railroad industry, the U.S. Department of Commerce states that freight railroads help sustain 1.2 million jobs through the industries that provide goods and services to the railroad.

## 4.8 Population, Employment and Income Trends

Ultimately, as noted in the Connecticut State Rail Plan, the success of the rail freight industry is less dependent on the infrastructure than it is on the health of the larger economy. This section discusses trends that will support or undermine economic health, generally.

### 4.8.1 The Economic Geography of Global Connections.

Historically, population and economic growth have tracked closely with growth in U.S. freight volumes:

**Population** – people demanding goods and services that require supplies, raw materials or finished products to be shipped in to serve that demand.

**Economic growth** – more people with more money to spend usually means more freight demand, in proportion to that growth.

Recently, two domestic trends bear poorly on the economic growth-related freight demand that had been the hallmark of America’s consumer society for the second half of the 20<sup>th</sup> century. First, the 2008 recession disrupted the steady national demand that had driven freight demand for decades. Second, some of the underlying causes of the recession—especially the weakening of the middle class—have not abated. A slow climb out of official recession has not been accompanied by significant, or seemingly sustainable, growth in middle class buying power. Hence, general demand for locally or regionally driven freight growth remains weak.

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<sup>52</sup> David Forkenbrock, 2001. Comparison of External Costs of Rail and Truck Freight Transportation. *Transportation Research: An International Journal* 35 (4): 321-337.

<sup>53</sup> American Association of Railroads, <http://www.aar.org/Economy/Economy.aspx>

<sup>54</sup> American Association of Railroads, The Economic Impact of America’s Freight Railroads <https://www.aar.org/keyissues/Documents/Background-Papers/Economic%20Impact%20of%20US%20Freight%20RRs%20April%202013.pdf>

In the global economy, however, demand for local products and resources such as lumber and aggregate do not necessarily have to come from the surrounding region, or even the United States. With many container ships returning empty or partially full on their trip to offshore manufacturing sites, there is abundant opportunity to move Connecticut products and materials relatively cheaply via rail and ship to growing foreign markets.

Also, Connecticut sits between major population and finance centers (Boston and New York City) and is located on a transportation-rich corridor connecting urban centers with freight generators. In fact, the development of regional rail “highways” such as the Knowledge Corridor and Patriot Corridor, take advantage of and serve these markets and centers of activity.

Thus, for a lower-density corridor such as the CCRS study corridor, local population, employment and income trends will have more impact on transit ridership than on freight demand. However, the impact of rail investment and growth on corridor employment and income could be significant<sup>55</sup>. Additionally, these population and economic indicators may play into state decision-makers’ determination of whether and how to invest in corridor rail infrastructure to encourage job growth and economic vitality in central Connecticut.

#### 4.8.2 Corridor Population Growth Slower than State Average

Total 2010 corridor population in the six communities along the PAS Line is nearly 294,000. The Study Corridor growth rate between 2000 and 2010 was 2.7% - little over half of the 4.9% statewide population increase for that period. Of the six corridor towns, Berlin saw the highest growth (9.1%) and Bristol the lowest (0.7%) for that ten-year period.

Regardless of the reasons for the lower-than-average population growth, it is not likely that Connecticut’s freight growth will be strongly tied to regional or state changes in population. Rather, given the state’s mix of commodities moving to markets, the total volumes will be more directly associated with national and global economic trends, and related demand for products and resources. For example, it is the larger regional construction cycle, as opposed to local activity, that will impact the carload volumes of construction debris carried by rail on the corridor. That is, local consumer-driven demand that is partly a function of population and disposable income will not be a key driver of rail-served business growth on the Pan Am Line between Waterbury and Berlin.

#### 4.8.3 Corridor Unemployment Higher than State Average

The September 2014 seasonally adjusted unemployment rate for the state of Connecticut was 6.4%, compared to 5.9% nationally<sup>56</sup>. Although still higher than the national average, Connecticut’s statewide unemployment rate has been trending downward, reflecting a gradual return of jobs and a stabilization of the workforce following the 2008 Great Recession.

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<sup>55</sup> Carl J. Stephani, Executive Director of Central Connecticut Regional Planning Agency is quoted on AAR’s website, “We have a rail industry that is not only thriving, but driving economic growth and job creation here at home and nationwide. Both here in Connecticut and across the nation, much of our economic future truly is riding on rail.” <http://freightrailworks.org/state/ct>

<sup>56</sup> Connecticut Department of Labor, <http://www1.ctdol.state.ct.us/lmi/laus/lmi121.asp>

The 2013 seasonally adjusted unemployment rate in each of the Study Corridor communities is higher than the current state figure, except for Berlin, which is just below the state unemployment rate (Table 1<sup>57</sup>). It is likely that the 2014 numbers, when they are available in seasonally adjusted form, will show improvement since 2013, but Waterbury and New Britain, which are larger population centers, are showing recent double-digit unemployment.

**Table 1. CCRS Population, Unemployment and Income**

<b>Town</b>	<b>Planning Region</b>	<b>2010 Population (US Census)</b>	<b>2013 Unemployment Rate (U.S. Census NECTA Data)</b>	<b>2010 Median Household Income (ACS 2006-2010)</b>
Waterbury	Naugatuck Valley	110,366	12.5%	\$40,254
Plymouth		12,243	8.9%	\$71,630
Bristol		60,477	8.1%	\$58,537
Plainville	Capitol	17,716	7.6%	\$63,447
New Britain		73,206	10.8%	\$39,706
Berlin		19,866	6.3%	\$86,211
<b>Study Corridor</b>		<b>293,874</b>		<b>\$59,964</b>
<b>Connecticut</b>				<b>\$67,740</b>

#### 4.8.4 Corridor Income Lags the State

Median household incomes within the CCRS Study Corridor are generally lower than the Connecticut median household income of \$67,740. Waterbury and New Britain are each significantly below 80% of statewide median household income—that is, below \$54,192.

#### 4.8.5 Connecticut State Gross Domestic Product

2013 year-over-year change in real Gross Domestic Product (GDP), Figure 13<sup>58</sup> shows Connecticut at 0.9%, roughly tied with Maine and New Hampshire, and experiencing lower growth than Massachusetts, Vermont, Rhode Island, and New England as a whole.

<sup>57</sup> Sources: US Census Bureau, American Community Survey data (2006-2010)

<sup>58</sup> U.S. Department of Commerce Bureau of Economic Analysis

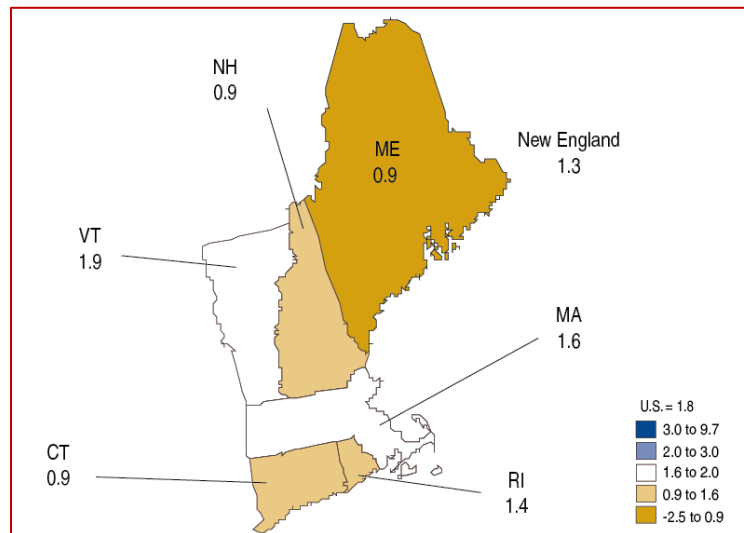


Figure 13. Percent Change in Real GDP by State, New England, 2013

## 4.9 CCRS Corridor-Level Freight Profile and Rail-Freight Friendliness

### 4.9.1 Knowledge Corridor Demonstrates Interregional Collaboration to Support Rail

Infrastructure and investments associated with the Knowledge Corridor (Figure 14)<sup>59</sup> are discussed in Chapter 4. However, it is important to note the level of inter-state and intra-state governmental support for a rail-based economic development strategy. In fact, the Knowledge Corridor is itself used as a case study in an examination of transportation and economic development conducted by the National Association of Development Organizations.<sup>60</sup> Cited as an example of excellence in inter-regional collaboration and in effectively linking development strategies to outcomes, this partnership between three regional development organizations is focused on intercity passenger rail as a lever for development within an economic geography that crosses state borders (Hartford, CT and Springfield, MA).

The partnership has paid off in winning \$4.2 million in U.S. Department of Housing and Urban Development Sustainable Communities funds, which helped update regional plans in the area as a foundation for development of an action plan. Freight and passenger upgrades to the Amtrak Springfield Line are elements of the Corridor's funded action plan. In addition, workforce development, brownfield site remediation (including New Britain and Hartford) and regional livability, can enhance the potential for business retention and siting in the area.

<sup>59</sup> Source: [www.Sustainableknowledgecorridor.com](http://www.Sustainableknowledgecorridor.com)

<sup>60</sup> Aligning Strategies to Maximize Impact: Case Studies on Transportation and Economic Development, NADO, pp 5-9, at <http://www.nado.org/wp-content/uploads/2012/10/AligningStrategies.pdf>



Figure 14. New England's Knowledge Corridor<sup>61</sup>

#### 4.9.2 Local Business Climate

##### *Manufacturing*

Historically, the manufacturing sector has been the “buyer” and beneficiary of freight rail capacity in central Connecticut. The decline in this sector is due to factors outside the scope of this study, and for the most part, outside the influence of the State of Connecticut. Global economic forces, including domestic influences on legislation and taxation, have supported a deindustrialization process, including the off-shoring of manufacturing, and the export of jobs. Although this has also been a boon for some US ports and connecting freight railroads, it is not a trend that helps the PAS Line in particular.

Statewide, Connecticut hosts approximately 5,242 manufacturers, employing about 208,000 workers. Yet this represents a drop in industrial jobs of 6.2% since June 2009—even while overall manufacturing has climbed 3.4% during the same period, nationally.<sup>62</sup> A bright spot countering this statewide trend, however, is Bristol, which is up 1% in industrial jobs since 2009. Bristol ranks second in total number of industrial jobs in the state, employing 8,658 workers.

Recent statewide downward trends in employment have been calculated variously as between 600 to nearly 2,000 manufacturing jobs lost between summer 2013 and summer 2014<sup>63</sup> which Patrick Flaherty, a state Department of Labor economist, characterizes as a stabilization after years of more severe declines.<sup>64</sup> Hidden in these workforce statistics is the fact that many younger workers are replacing those retiring, which, along with increased worker productivity, is dampening the increase in absolute manufacturing sector jobs in the state.

##### *Industrial Land Use Availability*

During field investigation of the PAS track infrastructure, the Study Team identified several potential sites with existing or easily developed rail access. A brief review of industrial land offered for sale or lease, and discussions with a corridor-based industrial real estate specialist,

<sup>61</sup> Credit: <http://www.sustainableknowledgecorridor.com>

<sup>62</sup> Manufacturers’ News, Inc., August 13, 2014. <http://www.manufacturersnews.com/news/story/connecticut-manufacturing-employment-continues-to-decline>

<sup>63</sup> Lower job loss figures are from Connecticut Department of Labor; higher are from Manufacturers’ News, Inc, a manufacturing survey company. Discrepancies also arise from variations in reporting periods.

<sup>64</sup> <http://www.newstimes.com/business/article/Connecticut-manufacturing-jobs-continue-declining-5696661.php>

indicates good availability of rail-adjacent sites—some vacant and others with existing warehouse or other buildings on site. Initial identified locations are:

- Hancock Rd., Plymouth
- Former Curtis-Wright site, Bristol
- Former GE Facility, Plainville
- Former Stanley Works site, New Britain
- Berlin area site north of Kensington/Berlin Station
- Former Perma Treat Site
- Gateway Crossings, Hartford Square Industrial, New Britain (Distribution Warehouse Space has hopper car unloading trestle and two private loading docks)
- Site near Theis Precision Steel, Bristol (neglected rail spur exists)

Although environmental remediation is likely required at some of these locations, the supply of land appears to be adequate in the near and longer term, with many sites appropriate for direct rail access and others well suited for development as potential transload hubs.

The Study Team also worked with PAS to create a corridor map that identifies existing customers and potential rail-served customer sites (Figure 15).

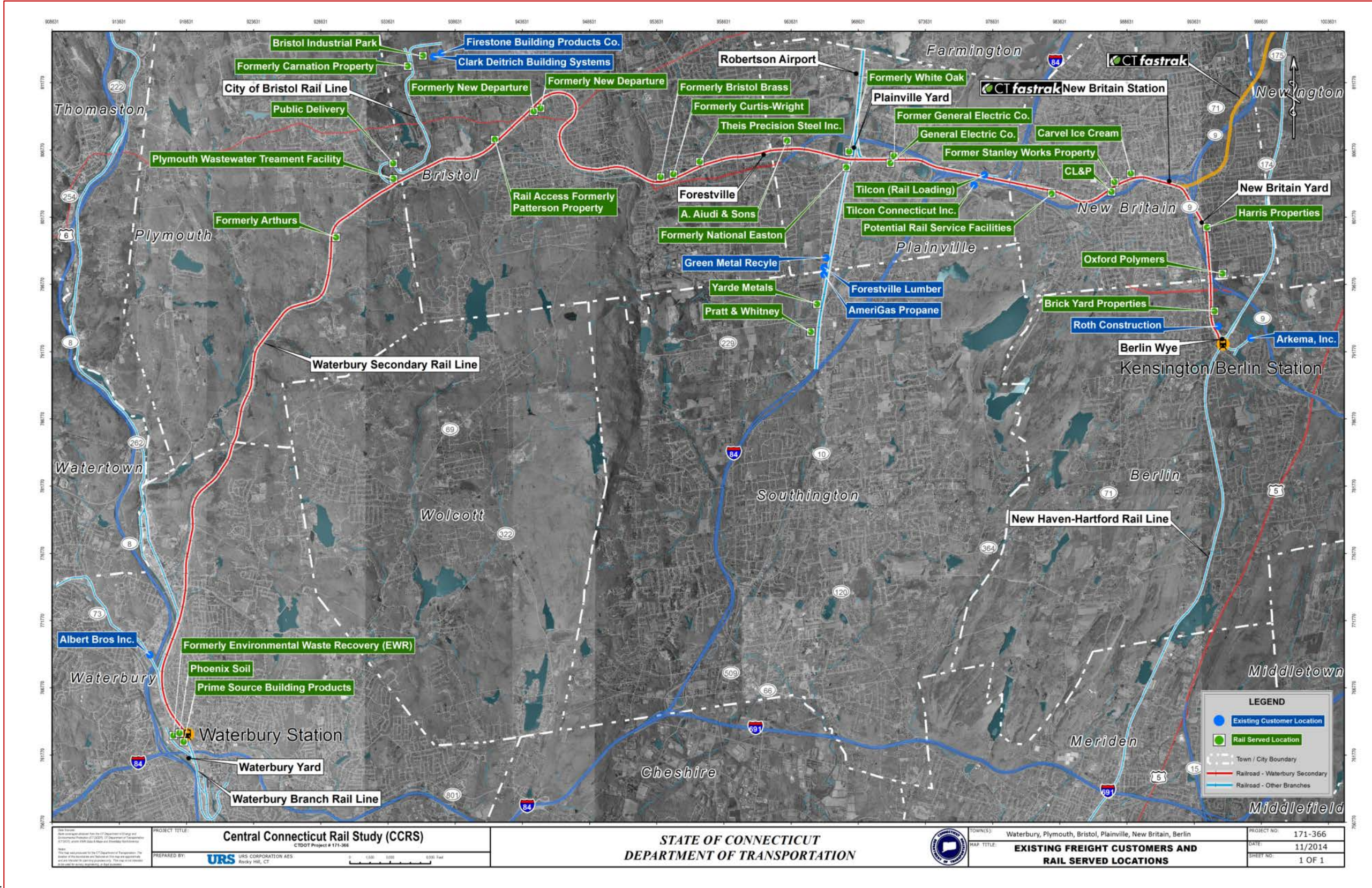


Figure 15: Existing and Potential Freight Customers

## 4.10 Connecticut Rail Service

Chapter 4 provides detail about the railroads operating in Connecticut – their infrastructure and markets. A brief overview is included here to provide context for discussions of commodity flows in the state. Currently, the sole Class I carrier, CSX Transportation, operates on 68 miles of track. Three regional railroads (Pan Am Railways, New England Central and Providence and Worcester) operate on 466 miles of track and four local railroads (Central New England Railroad, Connecticut Southern Railroad, Housatonic Railroad and the Naugatuck Railroad) operate on 203 miles. Including trackage rights, these eight railroads operate on 737 miles of track; excluding trackage rights, the state’s freight rail network comprises 364 miles.

## 4.11 Connecticut Commodity Flow Profile

### 4.11.1 How Top Commodities Enter, Exit and Circulate within Connecticut

To assess the potential for future commodity-specific growth in freight rail in the CCRS study corridor, we start by looking at what kind of freight commodities prevail, and what modes are being used to bring supplies and products in and out of the state, and to see how they circulate between origins and destinations within the state.

Looking at the weight of commodities provides a glimpse into the heavier commodities that are targets for diversion from truck to rail. Figure 16<sup>65</sup> shows that, by weight, metals and chemicals make up more than a third of incoming freight, regardless of mode, for all of Connecticut in 2012. Cereal grains and coal make up another quarter of incoming freight by volume. The top commodities leaving the state, for all freight modes, are coal (not elsewhere classified) at 19%; foodstuffs (14%); base metals (12%) and mixed freight at 11%.

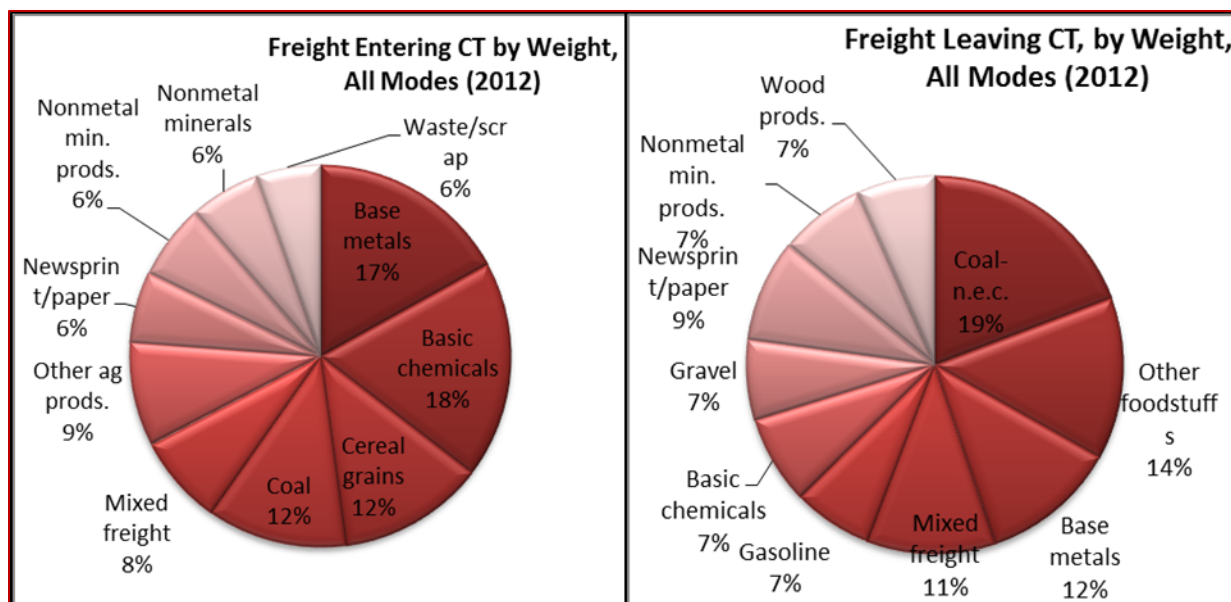
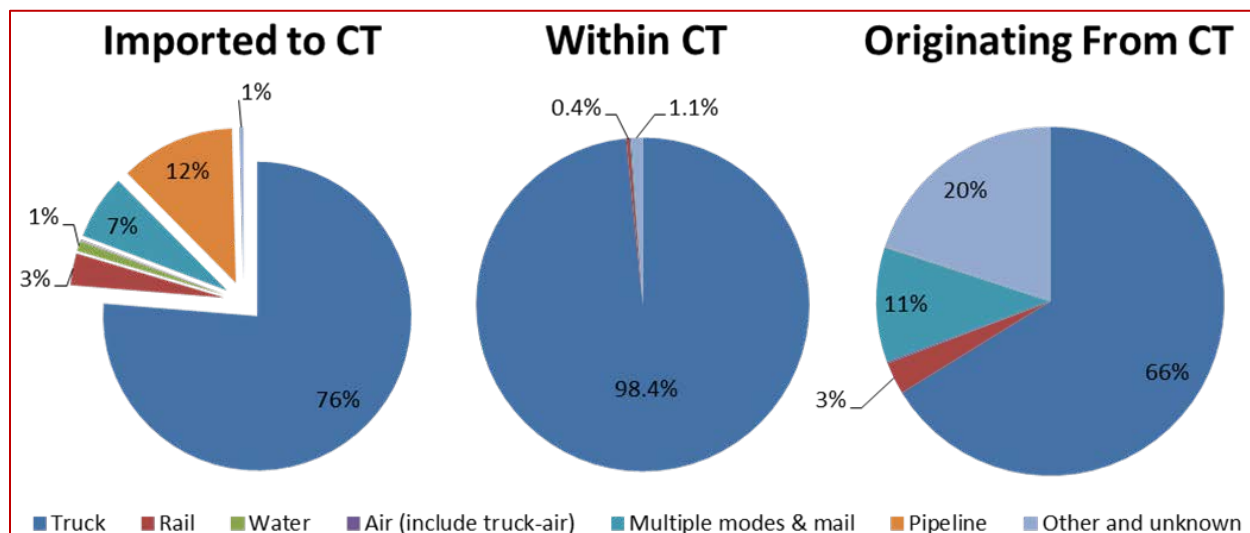


Figure 16. Commodities Originating and Terminating in Connecticut, 2012 (all modes)

<sup>65</sup> Source: Freight Management and Operations, Federal Highway Administration, Freight Analysis Framework, FAF3.5, <http://faf.ornl.gov/fafweb/Extraction1.aspx> Weight measures are expressed in short tons.

Next, we look at this basket of commodities entering and leaving the state, sorted by the freight mode by which they arrive, depart or are moved within the state. Figure 17<sup>66</sup> demonstrates that the primary mode of freight movement in Connecticut is trucking. In 2011, truck freight accounted for 66% of freight movement (measured in tons) originating in, 76% destined for and 98.4% moving from locations within the state. This is significantly higher than rail at 3% for imports and exports and 0.4% within state movement. Multimodal transport of freight, which may include rail, accounts for 11% of exports and 7% of imports. This is not surprising given the three ports (New London, New Haven, Bridgeport) and the state's initiative to increase truck to rail and rail to truck freight movement.



**Figure 17. Freight Tonnage by Mode (Entering, Within, Leaving CT) (2011)**

Data for 2012 shows that, looking through the lens of rail freight only, Connecticut originated 1.3 million tons and 13,400 carloads of commodities. As Figure 18 indicates, about half of these carloads were waste and scrap, and a third were primarily crushed and broken stone. This reflects the strong construction debris business in the state.

Rail traffic terminating in Connecticut in 2012 totaled about the same weight – 1.3 million tons—and about 15,900 carloads. More than a third of this volume was metals, including steel and rolling mill products. Stone, sand and gravel made up more than a quarter of incoming rail carload traffic. Following those two commodities were farm and food products (12%), chemicals (8%) and lumber and wood (5%).

<sup>66</sup> Source: AAR data,  
[https://www.aar.org/Style%20Library/railroads\\_and\\_states/dist/data/pdf/Connecticut%202012.pdf](https://www.aar.org/Style%20Library/railroads_and_states/dist/data/pdf/Connecticut%202012.pdf)

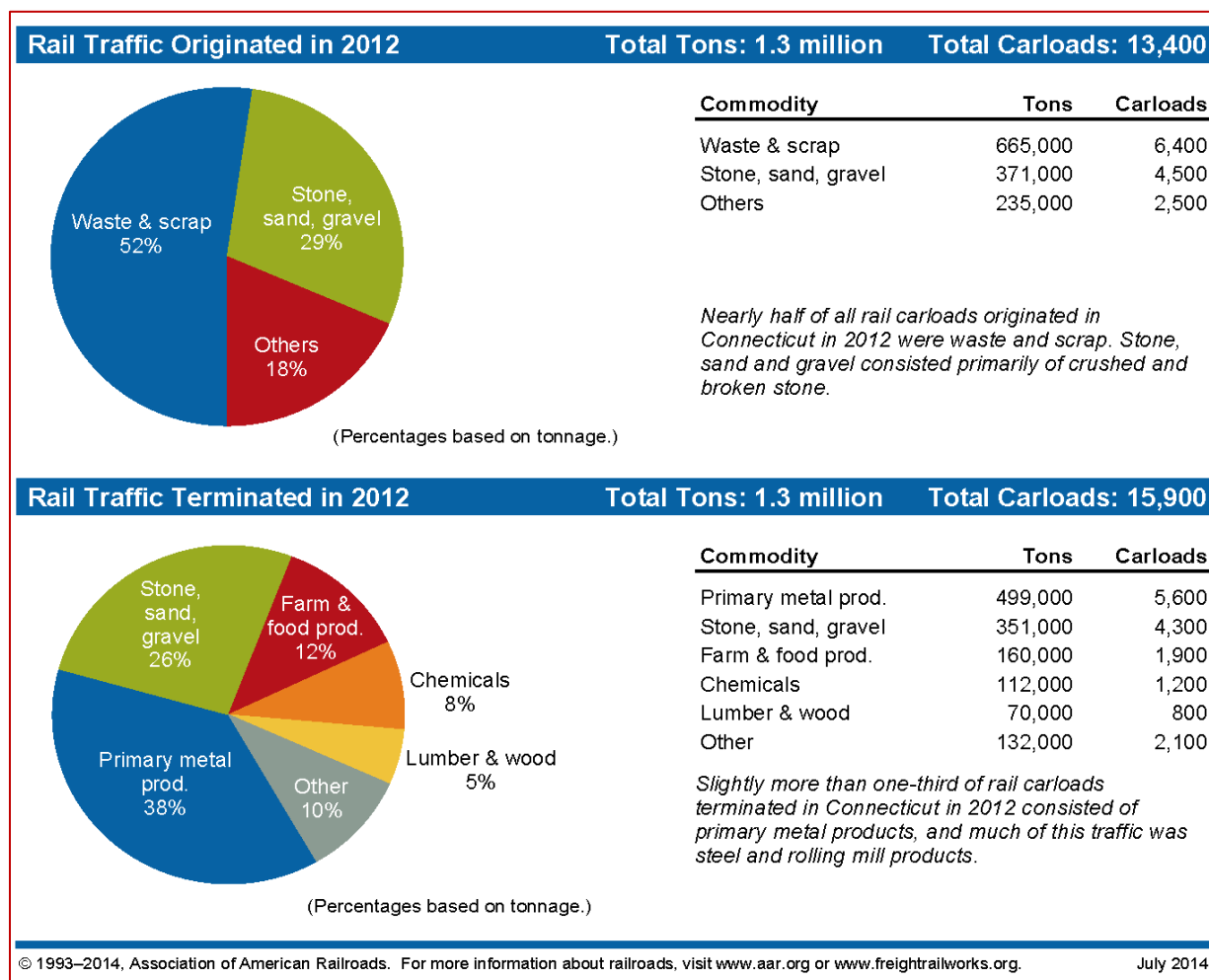


Figure 18. Rail Traffic Originated and Terminated in Connecticut (2012)

## 4.12 Commercial and Industrial Growth Prospects for Central Connecticut

### 4.12.1 Recession impacts and recovery evident in rail volumes

Prior to the recession the national record for intermodal traffic occurred in 2006, when 12.3 million containers and trailers were moved on the nation's rail network. In 2009, the depth of the recession for the railroads, this number declined to 9.9 million containers and trailers. With a steady increase since that time, 2013 levels beat pre-recession figures and a historical record of 12.8 million containers and trailers was set.<sup>67</sup> Record monthly volumes for six of the first eight months in 2014 have been observed.

### 4.12.2 Freight Rail Projections to 2040

While currently Connecticut imports more than they export across all freight modes, this is expected to change for rail (Figure 19<sup>68</sup>). As of 2012 Connecticut imported 1.9 million tons of freight and exported 2.1 million tons via rail and the trend is expected to continue as the amount

<sup>67</sup> Rail Intermodal Keeps America Moving, Association of American Railroads (April 2014)

<sup>68</sup> <http://faf.ornl.gov/fafweb/Extraction1.aspx>

of freight arriving in Connecticut levels off around the year 2030 at about 2.3 million tons. Rail export volumes are projected to register a drop of nearly 25% from 2012 to 2015, and then climb steadily until they surpass rail imports in 2030, and top 3 million tons annually by 2040.

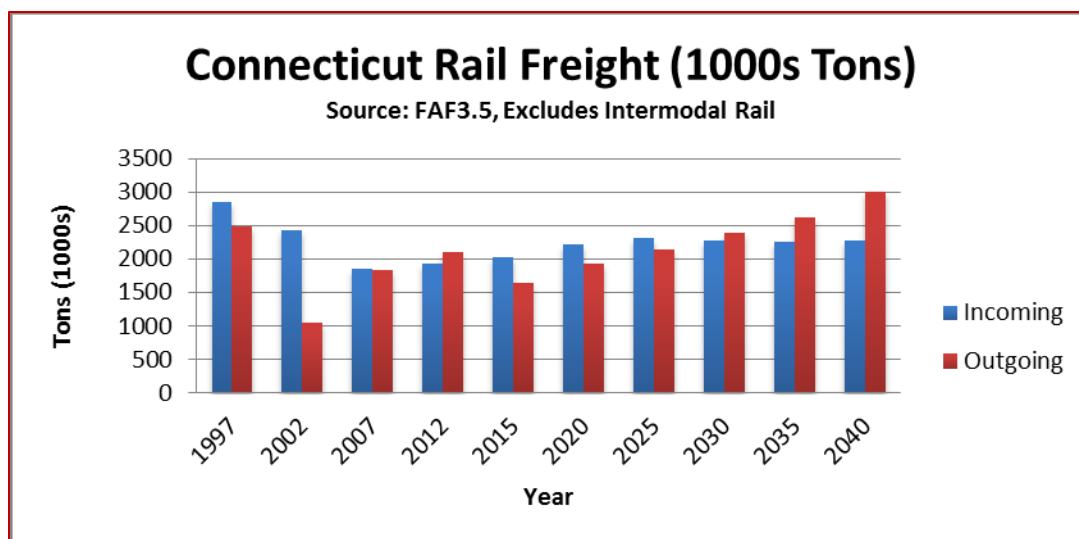


Figure 19. Connecticut Rail Freight (1000s Tons) 1997-2040

#### 4.12.3 Changes in Top 10 Commodities by Ton-Mile (All Modes, 2007-2012)

Finally, in order to identify the five-year commodity growth trends at the state level, Table 2<sup>69</sup> shows the top 10 commodities for 2007 and 2012 data for all modes, coming in, exiting and moving within the state, by constant dollar value, by weight, and by ton mile. Of these tables, the Top 10 by Ton-Mile figures can reveal those commodities that are heavy and travel longer distances, and thus may be “on the fence”<sup>70</sup> and amenable to diversion to rail.

**Top 10 Exports by Ton Mile – 29% Growth:** Four of the listed Top 10 by Weight commodities leaving the state in 2007 and 2012 grew by significant amounts: coal (47%); other agricultural products (38%); cereal grains (36%) and basic chemicals (29%). and other foodstuffs (25%). Strong growth in the export of plastic/rubber (16%), nonmetallic minerals (14%) and chemical products (11%) are also seen.

**Top 10 Imports by Ton-Mile – 9% Growth:** Newsprint (12% growth), coal n.e.c.<sup>71</sup> (12%), waste/scrap (11%) and other foodstuffs (11%) were the high growth area for incoming Top 10 by Ton-Miles commodities. Waste/scrap is currently in the mix commodities traveling by rail in the Study Corridor, is also a growth area. Newsprint was previously delivered on rail within the corridor.

<sup>69</sup> <http://faf.ornl.gov/fafweb/Extraction1.aspx>

<sup>70</sup> <http://www.dot.state.fl.us/rail/Publications/Studies/Planning/ModeChoiceFactors.pdf>

<sup>71</sup> Coal n.e.c. (not elsewhere classified) includes products such as fireplace logs made from coal, fuel briquettes made with petroleum binder, waxes, petroleum, and coke, petroleum not produced in petroleum refineries. [https://www.osha.gov/pls/imis/sic\\_manual.display?id=631&tab=description](https://www.osha.gov/pls/imis/sic_manual.display?id=631&tab=description)

**Top Ten by Ton-Mile Traveling Within Connecticut - 3% Growth:** As a group, those commodities circulating within the state show the least overall increase. But those showing the highest percentage growth in the Top 10 by Weight category, between 2007 are natural sands (12%), coal n.e.c. (12%) and gasoline (11%). Given the short intra-state distances involved, it is unlikely that much of this traffic can be diverted to rail from another mode.

To summarize, some support in the trend data can be found for looking to waste/scrap, newsprint, basic chemicals, cereal grains, plastic/rubber, nonmetallic minerals, agricultural products and other commodities for rail freight growth potential. The period 2007-2012 was a volatile one for the country, however, and a variety of factors are present in these numbers.

**Table 2. CT Commodity Flows, All Modes (2007 & 2012 by value, weight & ton-miles)**

	Within Connecticut			From Connecticut			To Connecticut	
	Year			Year			Data	
Top 10 commodities by constant \$ value	2007	2012	Top 10 commodities by constant \$ value	2007	2012	Top 10 commodities by constant \$ value	2007	2012
Machinery	\$10,619	\$9,751	Textiles/leather	\$11,052	\$9,894	Mixed freight	\$10,135	\$10,237
Fuel oils	\$7,498	\$7,271	Base metals	\$8,284	\$8,386	Electronics	\$7,488	\$7,572
Gasoline	\$3,858	\$4,207	Electronics	\$7,364	\$7,283	Pharmaceuticals	\$7,189	\$6,965
Mixed freight	\$3,788	\$3,509	Mixed freight	\$6,897	\$6,646	Misc. mfg. prods.	\$6,208	\$6,566
Textiles/leather	\$3,746	\$3,782	Chemical prods.	\$6,700	\$7,056	Base metals	\$6,039	\$6,483
Base metals	\$3,528	\$3,506	Machinery	\$6,694	\$7,174	Machinery	\$5,314	\$5,811
Articles-base metal	\$3,284	\$3,179	Transport equip.	\$5,925	\$6,753	Textiles/leather	\$4,979	\$5,158
Unknown	\$3,071	\$2,970	Precision instruments	\$5,862	\$5,842	Motorized vehicles	\$3,857	\$4,226
Other foodstuffs	\$2,795	\$2,858	Misc. mfg. prods.	\$4,973	\$4,997	Other foodstuffs	\$3,627	\$3,693
Electronics	\$2,510	\$2,535	Articles-base metal	\$4,679	\$4,592	Plastics/rubber	\$3,418	\$3,482
<b>Total constant \$ value</b>	<b>\$44,697</b>	<b>\$43,568</b>	<b>Total constant \$ value</b>	<b>\$68,429</b>	<b>\$68,626</b>	<b>Total constant \$ value</b>	<b>\$58,255</b>	<b>\$60,193</b>
Top 10 by weight	2007	2012	Top 10 by weight	2007	2012	Top 10 by weight	2007	2012
Gravel	15,520	15,041	Base metals	5,386	5,467	Coal-n.e.c.	4,904	5,442
Fuel oils	11,861	11,536	Basic chemicals	4,751	5,929	Other foodstuffs	3,859	3,927
Waste/scrap	10,360	10,927	Cereal grains	3,045	3,999	Base metals	3,236	3,295
Nonmetal min. prods.	9,715	10,102	Coal	2,607	3,822	Mixed freight	3,078	3,124
Gasoline	5,605	6,183	Mixed freight	2,572	2,448	Gasoline	2,015	1,941
Coal-n.e.c.	4,457	5,008	Other ag prods.	2,173	2,835	Basic chemicals	1,985	2,139
Other foodstuffs	2,706	2,775	Newsprint/paper	1,970	1,928	Gravel	1,979	1,944
Natural sands	2,615	2,929	Nonmetal min. prods.	1,837	2,049	Newsprint/paper	1,949	2,467
Unknown	2,534	2,452	Nonmetallic minerals	1,772	1,932	Nonmetal min. prods.	1,936	2,086
Base metals	1,854	1,854	Waste/scrap	1,688	1,753	Wood prods.	1,818	1,906
<b>Total Weight (Ktons)</b>	<b>67,227</b>	<b>68,806</b>	<b>Total Weight (Ktons)</b>	<b>27,802</b>	<b>32,163</b>	<b>Total Weight (Ktons)</b>	<b>26,760</b>	<b>28,271</b>

**Table 2. CT Commodity Flows, All Modes (2007 & 2012 by value, weight & ton-miles) (continued)**

<b>Top 10 by ton-miles</b>	<b>2007</b>	<b>2012</b>	<b>Top 10 by ton-miles</b>	<b>2007</b>	<b>2012</b>	<b>Top 10 by ton-miles</b>	<b>2007</b>	<b>2012</b>
Gravel	446	441	Basic chemicals	9,506	12,299	Coal-n.e.c.	8,039	9,013
Fuel oils	336	331	Cereal grains	5,311	7,241	Base metals	2,889	3,032
Waste/scrap	332	342	Other ag prods.	5,126	7,079	Other foodstuffs	1,849	2,052
Nonmetal min. prods.	281	293	Coal	4,906	7,205	Wood prods.	1,619	1,731
Gasoline	182	202	Base metals	1,916	1,963	Basic chemicals	1,466	1,542
Coal-n.e.c.	122	137	Nonmetallic minerals	1,715	1,956	Newsprint/paper	1,288	1,443
Other foodstuffs	95	98	Plastics/rubber	1,327	1,537	Plastics/rubber	879	945
Base metals	72	72	Chemical prods.	1,302	1,451	Waste/scrap	772	857
Natural sands	70	78	Newsprint/paper	999	1,000	Nonmetal min. prods.	686	743
Unknown	66	65	Nonmetal min. prods.	765	834	Animal feed	615	615
<b>Total ton-miles</b>	<b>2,002</b>	<b>2,059</b>	<b>Total ton-miles</b>	<b>32,873</b>	<b>42,565</b>	<b>Total ton-miles</b>	<b>20,103</b>	<b>21,971</b>

## **Chapter 5. Profile of Corridor Area Rail Infrastructure, Operations, and Current and Potential Markets**

After a brief review of the larger regional rail network in which the state's rail system operates, this chapter focuses on the infrastructure and current and emerging customers and markets for the Pan Am Southern, the owner/operator of the CCRS study corridor (PAS Line), as well as the network and business plans of the most relevant connecting railroads. Information presented here is based on discussions with railroad representatives, interviews with PAS customers and potential customers, and research of available reports, grant applications and databases.

Over the past two decades, freight rail rates and service have gained competitive advantages through several waves of technological, operational and institutional change in the railroad business. In the 1980s and 90s, this brought the range at which rail competes effectively with trucks down from 750 miles to 500 miles. The particulars of freight rail flows in the Northeast U.S. create the context for Connecticut's connection to the national rail system and the global, intermodal freight network that moves the world's goods in the 21<sup>st</sup> century. The ability for any individual railroad, or the rail mode in general, to attract new rail shippers depends on the right mix of cost and service factors, as discussed earlier in this report. Infrastructure – that is, a modern rail network in a state of good repair that conforms to national standards and delivers a freight option that can compete successfully against trucks—is obviously key to the industry's ability to retain and attract business and support desired economic development.

### **5.1 New England's Connected System of Regional Rail Corridors**

Development of modernized freight rail corridors essentially establishes a rail version of the interstate highway, and positions railroads to compete effectively with long-haul trucking, although still relying on truck for first/mile last mile segments of the trip.

The joint venture between Pan Am Railways and Norfolk Southern (PAS) was formed in part to strengthen connections to established rail carriers in the west. The view of the Connecticut State Rail Plan is in alignment with the specific focus on improving intermodal connectivity and improving the Springfield Line, which will lay the foundation needed to expand and improve rail freight in Connecticut.

The key aspects of the plan point towards regional and national connectivity through not only the Knowledge Corridor but the PAS Patriot Corridor, which runs east-west in Massachusetts connecting Ayer to Mohawk, NY. From there, the network opens up dramatically through trackage and haulage rights between Mohawk and Binghamton and then westward through Norfolk Southern's Crescent Corridor. Additionally, intermodal hubs, inland ports and deep-water ports are becoming ever more important in facilitating the multimodal transport of freight, providing flexible shipping options for a wider range of potential customers. Recent investment at the Port of New Haven is enabling the Providence and Worcester Railroad to gain new customers and remove trucks from the state's roadways, while the New England Central Railroad is developing new capacity to access the deep-water Port of New London.

### 5.1.1 Knowledge Corridor

The Knowledge Corridor (Figure 20<sup>72</sup>) runs from Hartford, CT to the Vermont/Massachusetts border and contains part of the New Haven-Hartford-Springfield line (NHHS). Amtrak owns the section of the NHHS line from New Haven, CT to Springfield, MA. Pan Am Southern has trackage and haulage rights along the Amtrak-owned line and currently owns the approximate 49.5-mile northern section between Springfield and East Northfield, which ties into the Patriot corridor (Figure 21<sup>73</sup>), however the Massachusetts Department of Transportation (MassDOT) is in the process of acquiring this portion from PAS.

Currently the north-south line is undergoing significant infrastructure changes in Massachusetts, where the Vermonter intercity passenger train service is being restored to its original route on the shorter and more direct alignment now owned by PAS. Thus, the Knowledge Corridor initiative is relocating Amtrak back to the west side of the Connecticut River (currently it must travel east to Palmer from Springfield, reverse and then head north on the east side of the Connecticut River) through a \$70 million dollar FRA grant awarded to MassDOT as part of the American Recovery and Reinvestment Act High Speed and Intercity Passenger Rail Program<sup>74</sup>, with additional funding provided by MassDOT.

This improvement will greatly benefit PAS as track speeds increase from the current 10 MPH to 40 MPH for freight trains and a maximum of 79 MPH for passenger trains. The infrastructure improvements include approximately 90,000 new ties, new 136RE continuous welded rail, grade crossing warning device improvements, bridge and culvert repairs, and a new signal / train control system. New passenger stations are being installed in Greenfield and Northampton. A third passenger station is being designed and constructed in Holyoke but is being separately funded. This project will significantly improve freight service options throughout the region and will help reduce the trip time between the PAS Deerfield Yard in MA and lines in Connecticut.

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<sup>72</sup> Source: [http://rail.vermont.gov/passenger/future\\_services](http://rail.vermont.gov/passenger/future_services)

<sup>73</sup> Source: Pan Am Railways 2012 System Map

<sup>74</sup> Source: MassDOT, Office of transportation Planning, <http://www.massdot.state.ma.us/knowledgecorridor/>

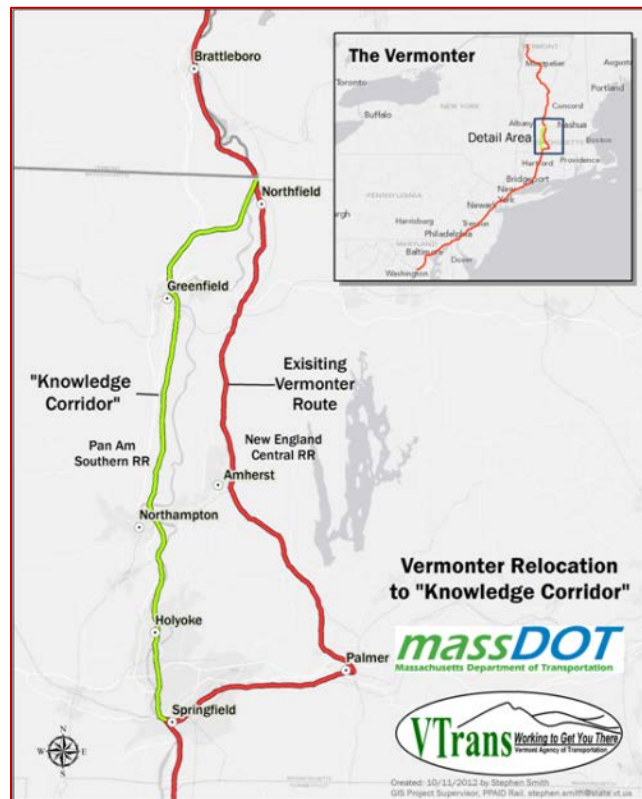
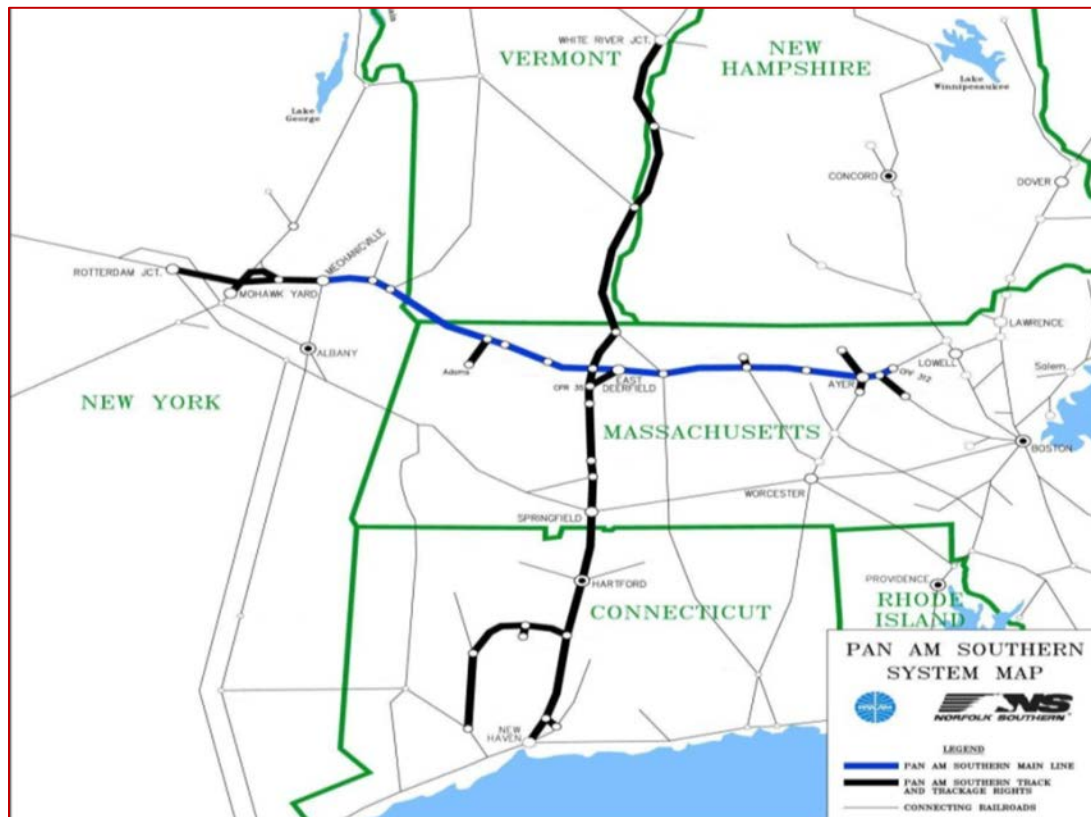


Figure 20. Knowledge Corridor

### 5.1.2 Patriot Corridor<sup>75</sup>

The Patriot Corridor is an east-west line between Ayer, MA and Mohawk, NY (shown in blue on Figure 21). It will improve rail connections between New England and the national rail network, allowing Class I railroads to further penetrate the New England Market. The Patriot Corridor will improve shipping options for New England and NY shippers through increased competition, and faster, higher capacity service between Albany and Boston, and drastically expanding the terminal capacity for the automobile and intermodal market.

<sup>75</sup> Source: Norfolk Southern presentation, Introducing the Patriot Corridor.  
[http://www.nscorp.com/nscportal/nscorp/pdf/patriot\\_corridor.pdf](http://www.nscorp.com/nscportal/nscorp/pdf/patriot_corridor.pdf)



**Figure 21. Pan Am Southern System Map Showing Patriot Corridor**

The Patriot Corridor projects will not only improve access for PAS, but will benefit Providence & Worcester, Vermont Railroad and New England Central through new direct haulage interchanges. An increase in competition to move freight between Boston and Albany will strengthen the system and may result in increased savings for customers.

Along the corridor there are six interchange points with adjacent railroads, two of which are intermodal facilities and can accommodate the transfer of container shipments. There is the Ayer Intermodal facility at the east terminus and the new capital District Intermodal and Automotive Facility in Mechanicville, NY, which can hold 370 trailers and has an annual lift capacity of 70,000 containers. This east-west line in conjunction with the north-south Springfield line and new Capital District Intermodal and Automotive Facility will increase connectivity to the central Connecticut region, particularly if affected parties collaborate to invest and remove weight restrictions on Amtrak's Springfield Line.

### **5.1.3 Crescent Corridor**

The Crescent Corridor is a 2,500-mile freight network extending across 13 states from the mid-Atlantic to the Gulf Coast and is currently undergoing improvements (Figure 22). The \$2.5 billion project undertaken by Norfolk Southern in partnership with the USDOT, Alabama, Pennsylvania, Virginia, Tennessee and Mississippi, will upgrade the rail line through straightening curves, expanding and constructing terminals and laying passing routes. When complete it will be the most comprehensive public-private partnership for rail freight improvement in the east, with 300 new miles of track, expansion into 11 new markets, the

creation of 47,000-73,000, the conversion of more than 1.3 million long-haul trucks to rail, and over \$2 billion in monetized public benefits<sup>76</sup>. Access to the Crescent Corridor through the Springfield line and Patriot Corridor will dramatically increase system connectivity and thus the market reach of rail freight originating or arriving in Connecticut. This new corridor enables NS to compete directly with long-haul trucks.



Figure 22. Crescent Corridor Map

## 5.2 Multimodal, Intermodal Freight Transport

The ability to efficiently move containerized freight can be a major component of growth. More and more trucking companies are investing in equipment to haul rail containers as it becomes evident that long-haul trucking is in some instances inefficient and in the long run, unsustainable. This recognition has encouraged government policies designed to support a multimodal approach to freight movement that maximizes efficiency where possible, using waterways and railways for long haul (over 500 miles) and trucks for short haul, special handling and/or first- and last-mile access.

Connecticut legislation promotes connectivity and modal choice for freight, including better access to the ports of Massachusetts, New York and New Jersey. It is a state goal to support efficient goods movements between truck, rail and shipping ports. Of the three deep-water ports in Connecticut, two (New London and New Haven) are adjacent to rail yards.

<sup>76</sup> Source: Delaware Valley Regional Planning Commission, <http://www.dvrpc.org/Freight/pdf/2009-10-CrescentCorridor-Smith.pdf>

The New England Central Railroad (NECR) provides freight service to the New London State Pier, but in 2008 only 14 cargo vessels accessed the port, carrying lumber and copper. Because this port is located in an active Foreign Trade Zone and connects to a railway, it has the potential to provide access to the rest of the region. In recognition of this potential, a federal TIGER grant has been awarded to allow NECR to upgrade track accessing the port.

The New Haven Harbor consists of nine private ports with rail that is active to the Logistec's Waterfront Street Terminal via the Providence and Worcester Railroad, which maintains connections to the larger Norfolk Southern Railway.

### **5.3 Infrastructure Barriers to Increasing Freight Rail Market Share and Service Quality**

With new and modernized connections along the Springfield Line, Patriot Corridor, Crescent Corridor, Ports, and intermodal hubs for trucks, Connecticut will be positioned to open up to a much larger network of freight. However, while Connecticut and PAS are currently able to absorb an increase in rail freight volumes, there remain a number of barriers and concerns that must be addressed in order to take best advantage of this business opportunity.

Corridor-specific obstacles are discussed later in this chapter. However, railroad operators within the state, the CCRS Study team, and the state of Connecticut have identified the following system-level concerns that affect all or most freight rail operations in the state, all of which leave trucking in a stronger position relative to rail, as shown in Table 3.

**Table 3. Previously Identified Barriers to Rail Freight Market Growth in Connecticut**

	<b>Identified Rail Freight Barrier</b>	<b>How Rail Freight is Impacted</b>
1.	Loading restrictions below the national standard of 286,000 pound axle loading	Limits the amount that can be carried by each railcar, raising costs, lowering efficiency and in some cases deterring industrial locations in the state.
2.	Overhead clearances below 22'8"	Limits the size of cars and containers, limits double-stacking, all of which raises operating costs and shipping fees, constrains market penetration.
3.	Too few Hudson River rail crossings	Limiting access to western markets for railroads and shippers and/or causing delay and increased costs
4.	Low operating speeds of 25 and 10 MPH	Lowers service attractiveness for some shippers, increases costs (e.g. crews) for railroads
5.	Track fees for operating over Amtrak rights-of-way	All railroads (presumably) pay the same or similar fees to Amtrak, so there is no issue of competitive advantage among railroads. However, such high fees for rail can disadvantage rail compared to truck options available for a customer. In some cases (e.g., CSO's Amtrak switch maintenance fees) these fees remain in place regardless of revenue stream –i.e., - customer-- to cover them.
6.	States increasing orientation to business and service activities, and moving away from industry and manufacturing	This trend is beyond the control of the railroads, but if continued will decrease the overall freight market, as well as the rail-served freight market.
7.	Positive Train Control (PTC) requirements	PTC systems are expensive and will diminish rail's cost competitiveness compared to trucks.
8.	Deteriorating at-grade crossings	Impacts speeds and safety performance.
9.	Replacing and enlarging culverts	Replacing aging costly infrastructure such as culverts and bridges was identified as one of the largest concerns and financial burdens.
10.	Trespassing	Safety and liability issues affect human life and health for rail employees as well as public; can impact operations; could cause insurance costs to increase; affect railroad relations with public.

### 5.3.1 Weight Restrictions and Overhead/Vertical Clearance Limits

To connect to a larger rail network, Connecticut's rail lines must cross the Hudson River and/or the Connecticut River. These crossings are limited in number, and weight-restricted due to aging infrastructure. In particular, the bridge over the Connecticut River in Windsor Locks, which is owned by Amtrak, is restricted to an axle loading of 263,000, pounds—well below the national standard of 286,000 pounds. This weight restriction limits the amount of freight that can be hauled. Although such an upgrade is costly, and is not an Amtrak priority (it is not necessary for passenger service) this and other similar infrastructure upgrades needed to meet higher loading standards have been ranked as a priority for the state (Figure 23<sup>77</sup>). All freight railroads and existing and potential rail-served customers participating in this study have identified the Windsor Locks Amtrak Bridge over the Connecticut River as a significant obstacle to efficient and cost-effective rail service—essentially rendering Connecticut an “island” that will be increasingly closed off from the global network.

Overhead and vertical clearances also restrict a railroad's ability to increase service and penetrate a larger market. Although 20'6" is the minimum required clearance for double-stacking containers, 22'8" is the ideal. Older bridges tend not to meet the vertical clearance requirement

<sup>77</sup> Source: Office of Rail, January 2011. Note: “Modified” 286,000 pounds- This weight is allowed with alternating cars

of 22'6" set under Connecticut General Statute 13b-25. Currently, a modified stack (containing a domestic container on top of an international container, to comply with the accepted dimensional envelope) is used by some freight operators in Connecticut.

Horizontal clearance can also restrict access. The study area tracks are situated for double tracking but several of the newer bridges on the Pan Am Southern Line are not wide enough to accommodate a second track.

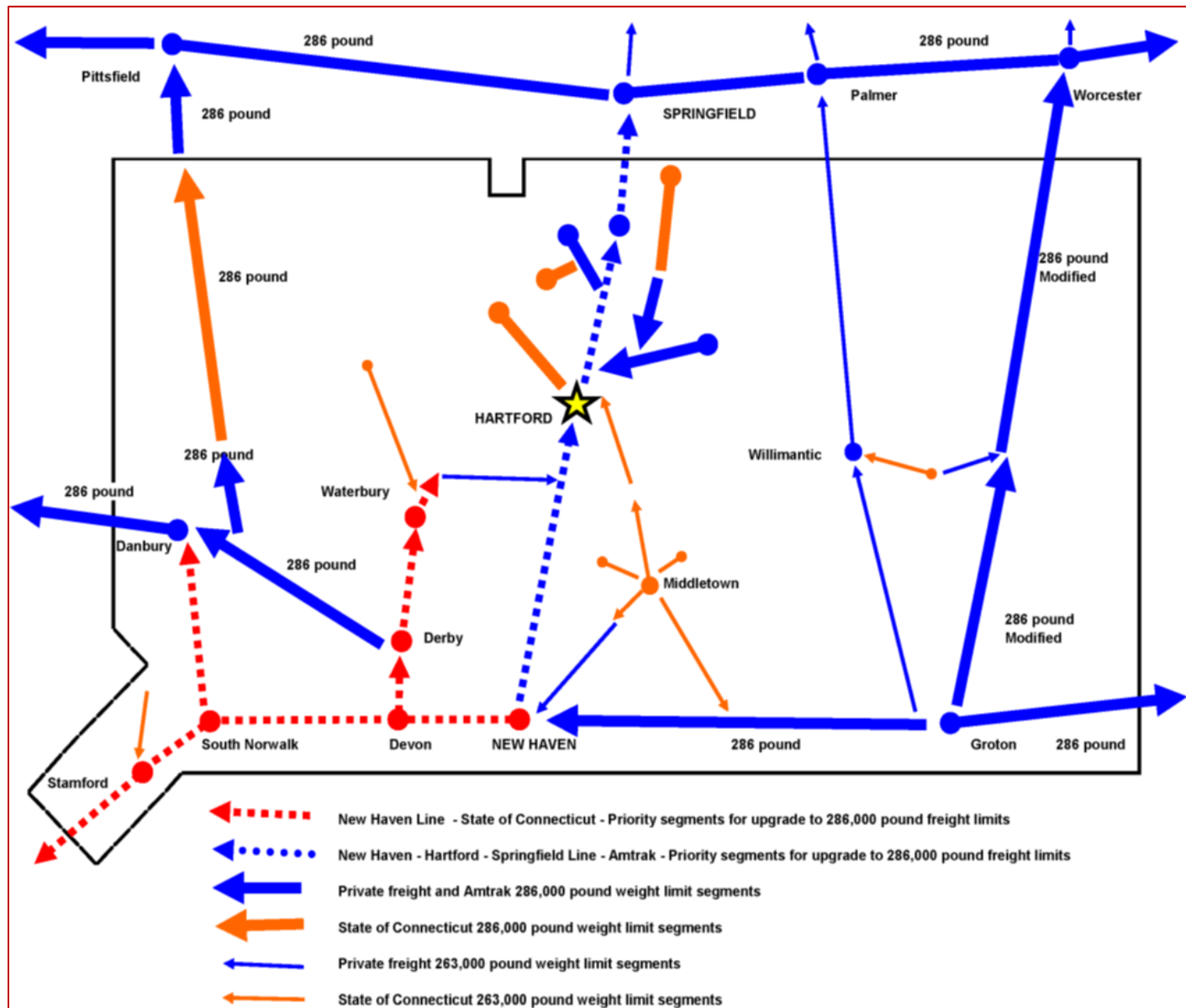


Figure 23. Freight Railroad Weight Limit Routes and Priority Segments Map

## **5.4 Impact of Passenger Rail Operators in or Connecting to CCRS Study Area**

### **5.4.1 Metro-North Railroad and Freight Rail Operations**

Although there is no passenger rail service currently operating on the Pan Am Southern tracks between Waterbury and Berlin, CT, Metro-North Railroad (MNR) passenger service terminates at Waterbury, 30 miles north of a freight interchange between PAS and Housatonic Railroad. This 30-mile section could see new freight traffic in the near future.

New passenger service on the PAS alignment is being considered as part of the CCRS scope of work. However, this report assumes that such service would only be implemented after the freight rail line is brought up to a state of good repair. This report primarily focuses on improving the existing line to provide better reliability and for encouraging expanded freight traffic on the route in the future.

Although the MNR Waterbury Branch is not electrified, there is overhead catenary wire on the New Haven Line, which limits rail cars to 15'-9"<sup>78</sup>. It is also important to note that, should passenger rail service be introduced to the PAS Line, infrastructure issues including new signalization, Positive Train Control (PTC), grade crossing protections, differing freight/passenger superelevation requirements, identification of new sidings to allow trains to meet and pass, location and configurations of passenger stations and platforms would have to be reviewed and addressed, depending on specific scenarios selected for passenger operations.

### **5.4.2 Amtrak and Freight Rail Operations**

At the east end of the study area, Amtrak stops at the Berlin Train Station, located along the New Haven-Hartford-Springfield Line. Railroads interviewed for this report consider existing freight slots sufficient to move their trains. However, virtually all freight stakeholders see the weight-restricted Amtrak Connecticut River Bridge at Windsor Locks as the most significant physical obstruction to developing Connecticut's rail freight business. There are also height and width restrictions in Hartford at the Albany Ave Tunnel just north of Hartford Station. The Central New England Railroad's Griffin Line connection is just south of the Albany Ave Tunnel.

Many also expressed concern about the level of fees Amtrak imposes on freight operators for use of its Springfield Line.

## **5.5 Freight Rail Operators in or Connecting to CCRS Study Area**

This section profiles key railroads operating in or connecting to the PAS Line that constitutes the CCRS study corridor. It summarizes infrastructure issues described in more detail in the Existing Conditions: Demographics & Transportation Report<sup>79</sup>, and focuses on the infrastructure, operations and business plans, perceived obstacles and "big picture" thinking from railroad representatives. It draws from the CCRS Existing Conditions Report, railroad and customer interviews and other research.

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<sup>78</sup> Association of American Railroads Equipment Diagrams for Interchange Service, Plate E clearances, adopted 1974, revised 1976. <http://www.icrr.net/plates.htm>

<sup>79</sup> Available on the project website at: [http://centralctrailstudy.com/docs/2013-0425%20CCRS%20Existing%20Conditions%20Report%20FINAL\\_update\\_small.pdf](http://centralctrailstudy.com/docs/2013-0425%20CCRS%20Existing%20Conditions%20Report%20FINAL_update_small.pdf)

Eight freight railroads (Figure 24<sup>80</sup>) operate in Connecticut on 628.5 miles of right-of-way, which includes privately owned railways as well as trackage rights on Amtrak and state-owned lines. Due to overlap, the actual trackage rights for miles operated for freight is 737 miles, approximately half of which is exclusive to freight.

	<b>Miles Operated In Connecticut in 2011</b>
<b>Class I Railroads</b>	
CSX Transportation	68
	<hr/> 68
<b>Regional Railroads</b>	
New England Central Railroad, Inc.	56
Pan Am Railways	105
Providence and Worcester Railroad Co.	305
	<hr/> 466
<b>Local Railroads</b>	
Central New England Railroad Co., Inc.	22
Connecticut Southern Railroad, Inc.	78
Housatonic Railroad Co., Inc.	83
Naugatuck Railroad Co.	20
	<hr/> 203

**Figure 24. Freight Rail Operating in Connecticut**

The Central Connecticut Rail Study (CCRS) Corridor (Figure 25), the focus of this study, is 24.3 miles long and owned by Pan Am Southern (PAS) and is commonly referred to as the Terryville Secondary – Waterbury Branch. In this report it will be called the Pan Am Southern Line, PAS Line or Line. With three general-purpose rail yards in the Study Corridor (Waterbury, Plainville, and New Britain) PAS is geographically well situated to increase operations and connect to the larger rail network. Other railroads that operate near or connect to the study area include CSX, Naugatuck Railroad Company, Providence and Worcester Railroad, Housatonic Railroad, Central New England Railroad, and two Genesee & Wyoming properties – the Connecticut Southern Railroad and the New England Central Railroad. These are discussed below.

<sup>80</sup> Source: Association of American Railroads, State Profiles. [www.freightrailworks.org](http://www.freightrailworks.org)

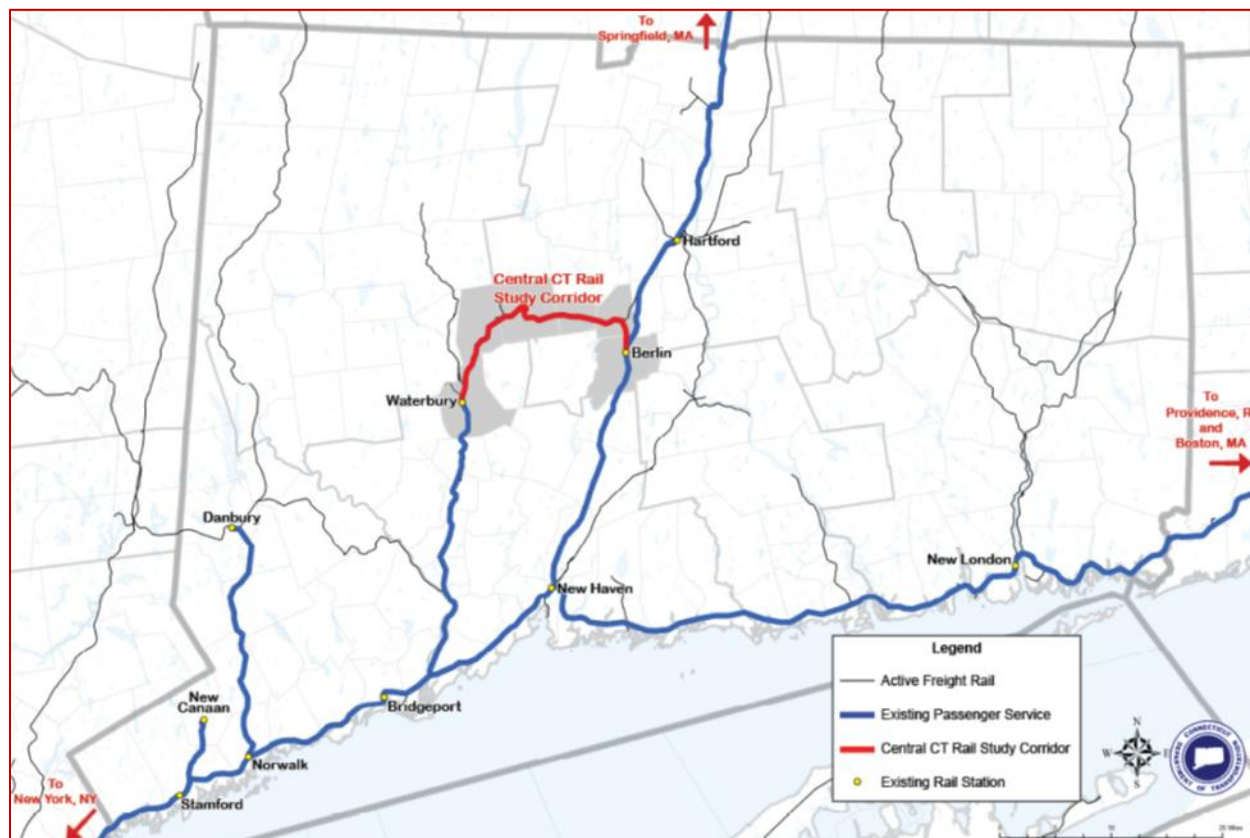


Figure 25. Central Connecticut Rail Study Statewide Rail Map

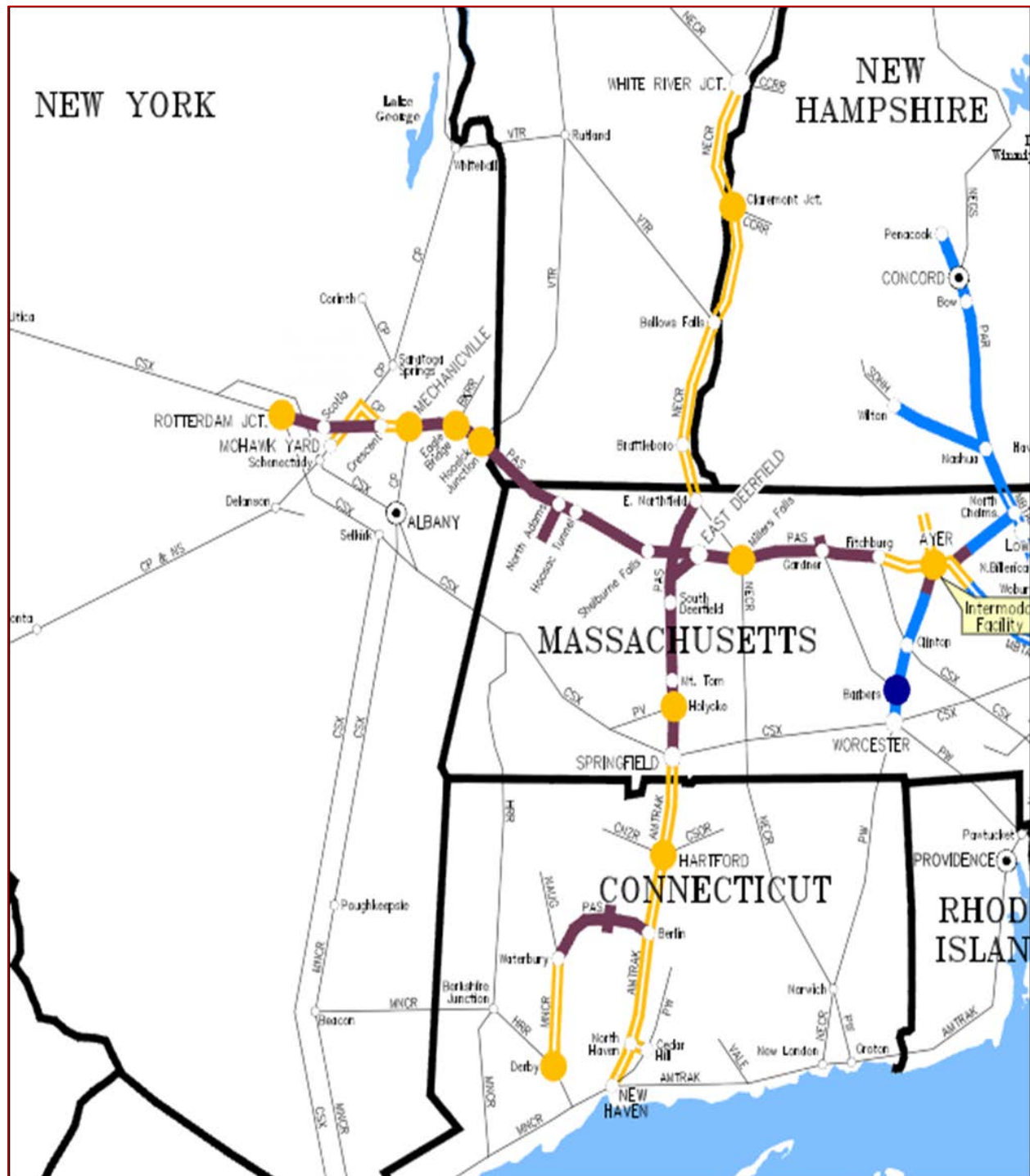
### 5.5.1 Pan Am Southern Railway

#### *Infrastructure*

Details of the PAS Waterbury Branch Line of the Pan Am Southern (PAS) Railroad are provided in the *Existing Conditions: Demographics and Transportation Report for the Central Connecticut Rail Study*, which can be found on the CCRS website.<sup>81</sup> A summary of key features of the Line is included here in order to highlight the relationship between infrastructure and current and potential freight rail utilization of the 24.3-mile track, extending from Berlin westward to Waterbury, Connecticut.

Pan Am Southern Railway (PAS) is a joint venture between Pan Am Railways –New England’s largest regional railroad – and Norfolk Southern (NS). Formed in 2009, this partnership has resulted thus far in more than \$100 million in capital investments in the northeast U.S., notably on the partnership’s intermodal and automobile corridor, which extends from Albany, NY to Ayer, MA. PAS owns the Capital District Intermodal and Automotive Facility (Mechanicville, NY near Albany), a \$45 million project that has been in service since July 2012. With an annual lift capacity of 70,000, two loading tracks, two support tracks, two auto ramp tracks and 370 trailer parking spaces, this facility services Chicago, and NYC to Boston via Binghamton. Norfolk Southern accesses the Northeast US via the Mechanicville facility.

<sup>81</sup> <http://www.centralctrailstudy.com>



**Figure 26. Pan Am Railways Trackage**

### *Track and Structures*

Historically, the PAS Line was double tracked, and freight speeds of up to 60 MPH were routine between Hartford and Waterbury. The Line also hosted passenger service at one time. The older bridge abutments along the alignment can still accommodate two tracks. The more recently built Route 9 Bridge in New Britain, however, was specifically designed to accommodate a single

track. Terryville Tunnel, built by the Army Corps of Engineers to accommodate the dam project, is 66 feet wide, and able to accommodate two tracks.

Currently, the Line, though nominally an “FRA Class II” railroad (meaning that track conditions allow for a maximum 25 MPH track speed), is operated in most segments as an FRA Class I Railroad, with a maximum track speed of 10 MPH. As documented in recent field visits, under existing conditions, track speed is limited to 10 MPH in three sections, along with approaches to connecting lines at eastern and western termini.

### *Yard Conditions*

**Deerfield Yard, MA.** This is the primary yard currently used by PAS to originate trains headed for the study corridor. PAS has recently invested in Deerfield Yard as train EDPL (East Deerfield-Plainville) originates here, and train PLED (Plainville – East Deerfield) terminates here. Infrastructure improvements within and approaching the yard have allowed for increased speeds in that area, thus helping to reduce delays to study area customers. Additional track and signal improvements are being constructed in the area of Deerfield Yard as part of MassDOT’s Knowledge Corridor “Restore Vermonter” Project.

**Plainville Yard, CT.** The Plainville Yard needs investment to modify track configuration and increase storage tracks to increase yard capacity and efficiency. The yard is used for PAS Connecticut operations, and they store and service locomotives here.

**Waterford Yard, CT.** This yard is owned, but not currently used, by PAS. Investment here could potentially improve PAS operations and capacity.

### *Signalization*

Within the study corridor limits, PAS operates trains on demand from its businesses, without signalization. FRA permits such operations on freight-only lines, where trains do not surpass 59 MPH. With additional freight (and/or passenger) service, the FRA may require improvements to some grade crossings. As with other freight operators on the Springfield Line, Amtrak will be requiring positive train control (PTC) compliance by the end of 2015.

### *Current Pan Am Southern Operations and Freight Business*

Currently (fall 2014), PAS operates a train out of Deerfield, down to Berlin and across to Waterbury, approximately two to three times per week. PAS operates a local train five days per week, serving six existing customers on the PAS Line, on an on-demand basis.

Although PAS has invested in its Connecticut infrastructure in some locations, from a rail business perspective (internal rate of return on investment), the Connecticut line has not thus far warranted the type of investment that has occurred in the main intermodal and automobile corridor from Mechanicville and Ayer (where 12-15 daily trains now operate). However, PAS views the Line as a priority for the railroad, and staff is actively marketing PAS service in the state, and in the CCRS Study Area, specifically.

Within the CCRS Study Corridor, the PAS system extends from Berlin west to Waterbury, with branch lines to service customers in Bristol, Plainville and Southington. Commodities handled

(and railcars used) by PAS include lumber (center beam flat cars), chemicals (tank cars), cement (hopper cars), scrap metal (gondola cars) and coiled steel (specialized coil cars).

### *Key Observations from PAS Customer Interviews*

As part of this project, the team interviewed all of the current rail customers, along with two potential customers (Inland Fuel Terminals and Tilcon Connecticut), that use the right of way. Such interviews are crucial to understanding current and future demand for freight rail services from the customer perspective.

The specific objectives of these interviews included:

- Articulate current rail freight use.
- Identify current conditions on the rail line.
- Obtain informed opinions as to the rail freight improvements that would be most useful to customer operations.

Pan Am Southern Railway (PAS) cooperated with and participated in the majority of the interviews. The Norfolk Southern Railroad, which is part owner of the PAS and a provider of national Class I connecting rail service, also participated in many of the discussions.

Current customers are:

- Firestone Building Products (Bristol)
- ClarkDeitrich Building Systems (Bristol)
- AmeriGas Propane (Plainville)
- Albert Brothers (Waterbury)
- Forestville Lumber Co. (Plainville)
- Meyer Enterprises –Transload and Warehousing Facility (Plainville)

### *About the Rail Customers*

- Most of the customers interviewed are established Connecticut businesses and longtime freight rail users.
- With the exception of Tilcon and Albert Brothers, these companies receive products via rail and distribute from their Connecticut locations via truck. Trucking is generally used because of the quantities involved, the local nature of the deliveries, and/or the need to ensure on-time delivery of the products.
  - Tilcon mines aggregate and stone and exports their product via rail using other CT railroad options; they are not currently a PAS customer.
  - Albert Brothers is a scrap metal processor and recycler that ships to U.S. mills.
- The markets served are generally regional – Connecticut and the surrounding states.
- The companies that provide the inbound products often determine the modes and carriers used for inbound movements. In these cases, discussions with those suppliers by Norfolk Southern and the PAS could potentially result in additional traffic.

### *Types of Commodities*

- The types of commodities moved by rail by these customers are typical of “carload” freight movements – bulkier and heavier products that are more transportation cost

sensitive and less time sensitive (though consistent transit and delivery times are essential). The commodities moving include lumber, propane, aggregate and stone, scrap metal, and metal coils.

- Some of these products have seasonal peaks (e.g., propane and building products).

### *Corridor Customers' Use of Rail*

- The businesses are small- and medium-sized with varying levels of rail traffic, which is typical of shortline railroad customers. The largest customer appears to be AmeriGas, which move several hundred carloads annually.
- Each of the PAS customers has their own on-site, but limited, rail storage, with the largest being AmeriGas with the ability to store up to eight cars. Some customers have or are in the process of upgrading their on-site rail storage facilities and capacity.
- Customers are reliant on PAS' Plainville Yard locally and Deerfield Yard in MA. Deerfield Yard appears to be the holding site for some of the customers' rail shipments, which are then moved into CT.

### *Service Considerations (PAS customer perspective)*

- Most of the customers noted that rail service has been improving in the corridor.
- Some customers expressed concerns regarding predictable delivery of products. Some reported shipments held up at Deerfield Yard, as well as the need for a predictable day for rail delivery.
- These products tend to be less time sensitive but are sensitive to cost and predictable rail delivery. In several cases, customers are using alternatives to the PAS because of cost and predictable rail delivery considerations. For example, one customer is using a transload facility to receive their products instead of being directly rail served by the PAS. This customer reported a significant savings through the use of transloading because they can pick up at the transload facility as a back haul after delivering to nearby customers using their own truck fleet. Another is using more expensive trucking for outbound freight rail movements because their customers have specific delivery time requirements; the CT rail service currently involves too long of a transit time (compared with trucks) and is not sufficiently consistent in terms of delivery.

### *Service Considerations (other (non-PAS) freight railroad perspective)*

- **Need consistent delivery/pickup times.** Customers identify consistent and reliable transit and delivery times, along with customer service as higher priorities than speed, and note that rail options had difficulty in meeting their expectations.

### *Most Requested Improvements by PAS Customers*

- To fully obtain the benefits of using freight rail, customers would like to be able to use national standard railcars, particularly at the full 286K standard. However, the need to run over either Amtrak or Metro North track limits the loadings to 263K. Several interviewees also noted that use of passenger rights of way can limit freight rail operating windows.

- Customers expressed concerns about capacity limitations at Plainview Yard, which can, in turn, cause capacity and service issues. Many customer carloads are currently stored at the much larger Deerfield Yard in MA before being moved into CT.
- Concerns were also expressed regarding bridge and grade crossing conditions.
- Some customers would like to see greater involvement by CT in terms of funding rail freight improvements at CT businesses and marketing CT companies that are rail users.

### *PAS Future Freight Market Potential*

The interviews with PAS customers indicated the potential rail growth through the potential shifting of truck to rail shipping. For example, one customer currently only moves five percent of their inbound products via rail, which could be grown further through discussions with their suppliers that are more distant in the supply chain; NS is following up on this potential growth area.

In another case, some of the outbound customers do not currently have direct rail sidings and/or have specific delivery time lines.

PAS has identified the following potential customers and markets:

- Inland Fuel Terminals (potential new customer included in stakeholder interviews)
- Tilcon Connecticut (which is using other CT rail operators)
- Biofuels (wood pellets)
- Road salt
- Gas byproducts
- Ethanol
- Overseas companies wishing to establish U.S. facilities
- Markets for single stack container and trailer on flat car (TOFC) services
- Additional off-line opportunities for transload and transflow rail facilities along the right-of-way to serve businesses not directly adjacent to the Line. PAS specifically notes potential for a plastic pellets transflow facility to replace the movement (currently on roadways) of this commodity to Connecticut customers from locations in Massachusetts.

### *Infrastructure Improvements and Marketing for Increased Freight Rail Mode Share*

**Great potential in the CCRS Corridor.** With NS as a joint partner, PAS anticipates growing the business in this corridor. That includes volumes generated from businesses along the PAS Line, as well as through-freight growth that will result from investments and market development in the larger regional rail network. PAS marketing specialists are in conversations with several businesses within the study corridor, and in other growing northeast corridors such as the Patriot and Knowledge Corridors.

**PAS provides regional access to New England.** A strategic advantage for the railroad, stemming from its corporate and physical connection to the large Pan Am Railways (PAR) rail network, is the significant amount of rail traffic that originates on its Maine-New Brunswick corridor. Thus, for example, PAS can bring lumber and wood products down from Maine or New Brunswick and deliver it to the Central New England Railroad (CNZR). This unique

capability to move freight easily into the state from any point in the Northeast U.S. plays into PAS's business plans for Connecticut.

**Derby interchange reactivation.** PAS is interested in reactivating its interchange with the Housatonic Railroad at Derby, 30 miles south of Waterbury, based on business prospects under pursuit by the Housatonic, and the desire for HHRC to offer its customers a choice of connecting railroads. The Providence and Worcester (PW) Railroad is also interested in discussing this interchange, which could help potential off-line opportunities in Bridgeport materialize. PW is also interested in an improved interchange with PAS at Cedar Hill Yard in North Haven.

**Plenty of available industrial land.** The PAS Line is dotted with rail-adjacent industrial sites that can be developed or redeveloped. However, PAS noted both the need and opportunity to engage and educate residents and local jurisdictions along the PAS Line with respect to jobs and economic development potential that would accompany redevelopment of industrial sites for rail-served businesses.

**Concerns about Amtrak fees.** Current customers receive a pass-through cost of high rates to travel on Amtrak's Springfield Line. PAS is not disadvantaged by this more than other carriers, since all freight railroads must pay this rate, but it does tend to dampen rail freight demand relative to trucking, all else being equal.

### 5.5.2 Norfolk Southern

#### *Infrastructure Profile*

Norfolk Southern is the fourth largest railroad in the U.S. This Class I railroad operates over 20,000 route miles of track in 22 states. As noted above, NS has partnered with Pan Am Railways to form Pan Am Southern, which is the owner and operator of freight on the PAS Line which is the subject of this study.

#### *Access to Markets*

With access to 43 ports, including every major ocean port on the East Coast from New York City south to Jacksonville, FLA, NS enables Connecticut shippers to access a global market.

A major initiative of the Patriot Corridor (described in more detail below) is the east-west Pan Am Southern Corridor from a new intermodal and automotive yard in Mechanicville. Mechanicville is, operationally, the NS gateway to New England. In the second quarter of 2014, NS's domestic intermodal volumes increased 8 percent, while its international intermodal business grew at double that rate.<sup>82</sup>

### 5.5.3 CSX

With predecessor railroads beginning in 1828 with construction of the Baltimore & Ohio Railroad—the nation's first common carrier railroad—through decades of expansion and consolidation leading to the official birth of CSX Corporation in 1980, the CSX system has grown to a 21,000 mile network covering 23 states, with access to more than two-thirds of the

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<sup>82</sup> Comments by Jeff Heller, NS Vice President for Intermodal and Automotive Marketing; in *Trains Magazine*, December 2014 ("Intermodal rail traffic rebounds", p.6.)

U.S. population.<sup>83</sup> CSX's physical footprint in Connecticut is confined to the yard in Cedar Hill, out of which CSO operates.

CSX prides itself as a leader in the rail renaissance not only in terms of business profitability, but also as the first company in the transportation industry to join the U.S. Environmental Protection Agency's Climate Leaders Program.<sup>84</sup> Recognizing the excellent service capability of rail-truck collaboration, CSX is innovating in rail-truck bundling, branded as "SpeedPlus" and which also offers trucking and warehousing into a single product.

CSX does not currently interchange with PAS, although some customers would like to have this option for routing and rates.

#### **5.5.4 Genesee & Wyoming (G&W)**

Genesee & Wyoming owns and operates 112 regional railroads and short lines in the United States, Australia, Canada, the Netherlands and Belgium. G&W acquired both the Connecticut Southern Railroad and the New England Central Railroad in 2012, as part of an acquisition of RailAmerica properties. G&W customer service orientation has resulted in positive performance for regional railroads and their rail-served customers throughout the G&W family of railroads.

Nationally, G&W's third-quarter operating revenues increased nearly eight percent compared to 2013. G&W's vision for growing the freight market in Connecticut includes steel, construction debris and lumber.

#### **5.5.5 Connecticut Southern Railroad Company (CSO)**

Connecticut Southern Railroad Company (CSO) began operations in 1996, and was acquired by Genesee & Wyoming in 2012 as part of the latter's acquisition of RailAmerica. CSO hauls approximately 20,000 carloads per year, including cars moved from West Springfield to Cedar Hill Yard under a haulage agreement with CSX, operates 55 miles of owned or leased track in Connecticut and Massachusetts. In 2011, CSO's 19,687 carloads yielded gross revenues of \$10.4 million. At that time, CSO had 18 employees, averaged 36 crew starts per week, and operated six days per week.<sup>85</sup>

#### ***Current and Potential Freight Markets***

CSO provides critical interchange points with CSX for Connecticut-based customers moving steel beams, construction debris, lumber, malt liquors, pulpboard and bulk materials headed for recycling facilities.

The CSO is a scheduled railroad. Current scheduled freight trains are:

- CSO 1 operates out of Springfield in the morning, with traffic to the Cedar Hill and back to Springfield.

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<sup>83</sup> CSX Website, <http://www.csx.com>

<sup>84</sup> CSX Website, <http://www.csx.com/index.cfm/about-csx/our-evolution-and-history/interactive-timeline/>

<sup>85</sup> Surface Transportation Board Filing, August 6, 2012, accessed at [http://www.stb.dot.gov/filings/all.nsf/d6ef3e0bc7fe3c6085256fe1004f61cb/3c1c56777bdc842585257a520069cf63/\\$FILE/232649.PDF](http://www.stb.dot.gov/filings/all.nsf/d6ef3e0bc7fe3c6085256fe1004f61cb/3c1c56777bdc842585257a520069cf63/$FILE/232649.PDF)

- CSO 2 runs Monday, Wednesday and Friday southbound to Cytec, Infra-Metals and customers in the Berlin area. The train departs Hartford at 6:30 PM. On Sunday, Tuesday and Thursday, the train departs Hartford to run north to Enfield Lumber.
- CSO 3 operates out of Hartford Yard to the East Windsor branch, with shipments of nutmeg, crushed glass and other products. This train operates three to four days per week for these customers, and also serves the regional market five days per week.

CSO interchanges with Pan Am Southern at Hartford (low-volume interchange); with Central New England Railroad in Hartford and East Windsor (their interchange at Hartford includes weekly deliveries to the Home Depot distribution center in Bloomfield); and with CSX in West Springfield and North Haven (the Cedar Hill Yard). CSO interchanges with CSX five days per week at West Springfield.

G&W/CSO/NECR is working with Amtrak corridor high-speed rail project staff to install a new switch in North Haven for Nicolock, a new company that makes paving stones. They will receive raw materials and ship out finished product via rail.

A significant obstacle to growth, especially on the CSO, is that the railroad can't get 286,000 pound cars onto the railroad because of 263,000 pound weight restrictions on Amtrak's Springfield Line. Two major bottlenecks (affecting PAS as well as CSO and virtually all freight railroads) are the Amtrak Connecticut River Bridge (Windsor Locks) at the Massachusetts/Connecticut line, and the Hartford viaduct through Hartford Union Station. Neither one of those has the capacity for 286K. But even if the railroad could just get the Connecticut River Bridge up to 286,000 cars, it could deliver those cars down to Hartford, and that would be tremendously helpful.

#### 5.5.6 New England Central Railroad (NECR)

Genesee & Wyoming's plan in Connecticut for both the CSO and the NECR, is to grow existing business with customers and also to establish new customers. They've been working closely with the economic development folks in the state to get some new business for both the railroads.

G&W's steel business is increasing, as is construction debris and lumber. The NECR specifically is seeing an increase in its metals business. In addition to the Nicolock paving stone company (mentioned in the discussion of potential CSO market growth), the railroad is developing business on the NECR with the new port authority with the state of Connecticut, by providing on-dock connections to ocean-going vessels and barges.

Aiding the railroad in materializing its business vision for Connecticut is the recently awarded (September 2014<sup>86</sup>) Transportation Investment Generating Economic Recovery (TIGER) grant, which will fund upgrades to 19 miles of rail running through Franklin, Norwich, Stafford and Willimantic. The approval of this \$8.2 million federal grant, together with the railroad's \$2 million private match, gives NECR and the state a huge boost toward modernizing Connecticut's

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<sup>86</sup> Connecticut Officials Announce TIGER Grant for New England Central Rail,  
<http://www.courtney.house.gov/press-releases/connecticut-officials-announce-tiger-grant-for-new-england-central-rail/>

rail system, developing the economic asset that is the deep-water Port of New London, and connecting it to the national network and all four eastern Class I railroads at Palmer, MA.

### 5.5.7 Central New England Railroad Company (CNE)

#### *Rail Operations, Current Customers and Vision to Attract New Business*

The Central New England Railroad (CNE) is a short line railroad that, in Connecticut, operates on CTDOT's Griffin Line (8.7 miles between Hartford and Windsor) and CTDOT's Armory Branch Line (extending 13.5 miles between South Windsor and the Massachusetts State Line in Enfield.) CNE serves customers located in central Connecticut, from Hartford to Bloomfield, and in East Windsor on the Armory Branch (East Windsor Secondary Track.) CNE operates five days per week from Hartford to Bloomfield, and provides occasional service on the East Windsor Secondary to serve its primary customer, a fertilizer company.

In part because CNE operates on state-owned corridors, their business development plans are closely tied to local and regional economic development. CNE recognizes that rail is only one option that shippers have. Although carloadings remain depressed along with the regional economy since the recession, CNE expects its current volumes to remain steady, as long as its largest shipper, Home Depot (a distribution center located in Bloomfield, maintains its business. CNE is in discussions with several prospective customers.

Pan Am Southern has interchange rights with CNE, and so CNE and PAS work together on some shipments where the PAS routing option is the cheapest for CNE customers. Improvements to the Waterbury Branch Line would impact CNE only if the resulting PAS freight rate is lower than the cost on Amtrak's Springfield Line. This has been the case recently, and CNE will always seek the optimum route (shortest shipping time) at the lowest freight rate for its customers.

CNE interchanges with CSO at CNE's Hartford interchange. CNE and CSO enjoy an excellent operational relationship.

#### *Infrastructure Constraints and Opportunities*

The Springfield Line has several height restrictions (overhead bridges) that restrict freight shipment and preclude double-stack cars that are currently operating on the CSX Boston & Albany main line, where bridges are being raised to accommodate double stack trains. Additionally, the Springfield Line's 263,000 pound weight restriction prohibits the use of larger, heavier (and cheaper to operate) freight cars. Upon upgrade of this track to 286,000 pound standards, this weight restriction will be removed.

Both CNE and the CTDOT have been making strategic investments in both CNE corridors. Prior to 2009, CTDOT provided \$1.2 million for grade crossing improvements and local bridge maintenance, which augmented \$2.5 million in CNE materials and labor. CNE received a \$2.4 million freight Rail Freight Improvement Program (RFIP) grant from CTDOT for track, signal,

grade crossing and right-of-way improvements to the Griffin Line.<sup>87</sup> They are awaiting notice to proceed to begin this work that will increase overall train speeds from 3-5 MPH to approximately 25 MPH, allowing for greatly improved service and reliability.

In CNE's view, if the Griffin Line were extended four miles to Bradley Field, it would change the basic economic development model for the central Connecticut region. Land development along the former Culbro tobacco land would drive increases in freight volumes, and housing and business would soon follow, as people could take the train to Hartford to work.

### 5.5.8 Providence and Worcester Railroad Company

#### *Infrastructure*

Providence and Worcester Railroad (P&W) was originally chartered in 1844, and connected Providence, RI to Worcester, MA. P&W now operates on 516 miles of track in Massachusetts, Rhode Island, Connecticut and New York. In 2013, P&W re-established rail access to the Port of New Haven, and expects to expand port-related freight business, taking advantage of infrastructure improvements associated with the I-95 New Haven Crossing Harbor Improvement Program.

P&W interchanges with PAS at Gardner, which is the most convenient location for P&W. P&W has discussed a Derby interchange with PAS, possibly for movements of aggregate and asphalt, but nothing has materialized.

P&W's routes are not impacted significantly by the Springfield Line weight restrictions. They are upgrading their routes to 286,000 pounds project by project. Recently they upgraded the Norwich Truss Bridge over the Shetucket River with their own funds. They have worked with Metro North Railroad to

#### *Freight Market Potential*

2013 was a good year for P&W, which saw annual gross revenues grow by \$3.3 million, or 11.2%--stemming from conventional and container freight revenue combined with other operational sources.

Increased aggregate in 2013 (hauling more than 11,000 carloads), and further expansion of this market is integral to P&W's business plan. Other commodities which saw growth on the P&W include plastics, metals, salt, cement, ethanol, chemicals and propane. Stable volumes of food-grade products, paper and lumber were observed in 2013, as were declines in auto traffic and coal. The latter declines were due to industry-specific trends, and were not rail-related. P&W expects autos to recover and remain an important piece of its business.

A strong upward trend in intermodal business is indicated by an 18.2% increase in 2013, to nearly 19,047 units. Over three years, P&W's intermodal volumes have grown by 76%, reflecting a strengthened modal advantage for rail-freight land bridge and shuttle service.

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<sup>87</sup> Funding was part of a CTDOT TIGER Grant request 2009.

[http://www.recovery.ct.gov/recovery/lib/recovery/certification/transportation/tiger/central\\_new\\_england\\_rr\\_tiger\\_grant.pdf](http://www.recovery.ct.gov/recovery/lib/recovery/certification/transportation/tiger/central_new_england_rr_tiger_grant.pdf)

P&W cites a strong system of interchanges with its connecting railroads as an important element in its recent growth, by offering competitive access to its customers. Additionally, the access to the Port of New Haven will be a focus for the next several years. Service to a biofuels manufacturer on Waterfront Street, alcohol for export and other new port-centered business is increasing. Commodities such as propane and aggregate, some import of structural steel, steel coming out of India headed for the interior of the U.S. when the Great Lakes freeze in winter—all are growth areas for P&W.

The company acknowledges the important of programs like Connecticut's Rail Freight Infrastructure Program (RFIP) which is helping with tie installation and surfacing in the eastern part of the state.<sup>88</sup>

#### **5.5.9 Naugatuck Railroad Company (NAUG)**

The Naugatuck Railroad Company (NAUG) is a shortline railroad that operates on 19.5 miles between Waterbury and Torrington, on state-owned track known as the Torrington Branch Line. The NAUG has a yard and mechanical restoration and repair facility at Thomaston (their milepost 6), which was built in phases, beginning in 2003.

Regular service on the original Naugatuck Railroad ended in 1995. Around that time, the Railroad Museum of New England (RMNE) was looking for a new location, and the old Naugatuck Railroad name was restored by state charter and passenger excursion trains began running in 1996. Its seasonal operations varies, but is now easily accommodated by existing freight shipping schedules.

#### ***Infrastructure and Freight Market Potential are Related***

The NAUG line has 100 lb rail in several locations. The weight limit on car loadings is 263,000 lbs because of the need to access the railroad from weight-restricted Amtrak and PAS lines. The NAUG's height clearance is Plate C – 15'-6".<sup>89</sup>

Previously identified culvert and bridge repairs and replacements have been moving forward. NAUG received CTDOT RFIP funding in May 2013, and execution of that agreement (which is imminent) will allow track improvement, tie replacement, surfacing and some installation of heavier (115 lb) relay rail to proceed. This work is concentrated near the site of a new and significant rail-served business. Although the last customer served on this line was Stone Container Corporation in Torrington, which closed in 1997, NAUG representatives have been working consistently and persistently with Cherry Hill Construction, located in North Branford, to re-establish freight rail service on its line. This construction and demolition facility, just north of their milepost 4, is expected to open toward the end of 2015. It will generate approximately 1000 annual outbound carloads. NAUG will deliver these to PAS at Waterbury, and PAS will take them north via Berlin, Hartford, Springfield to Deerfield and then west to final destination, possibly in Ohio.

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<sup>88</sup> 2014 President's Letter, Providence and Worcester Railroad Company Website, <http://www.pwrr.com>

<sup>89</sup> Association of American Railroads Equipment Diagrams for Interchange Service, Plate C standards adopted 1963, revised 1983, 1988, 1991. <http://www.icrr.net/plates.htm>

For this new business to be successful, PAS service must be consistent and reliable. In NAUG's view, sufficient crews to eliminate delays related to work rule crew changes, and sufficient cab signal-equipped locomotives in the central Connecticut area are essential to providing the service levels expected by this new customer.

**Interchange/Yard Needed.** The Naugatuck wishes to establish an interchange with PAS in Waterbury at the High Grade Yard, located opposite Waterbury Station, and has been in discussions with PAS and NS. If Naugatuck's projected 2015 traffic is to successfully interchange with PAS, investment will be required to restore four of the existing tracks to accommodate Naugatuck's 1000 annual carloads outbound (at project buildout), and to receive empties when they are needed – most likely on a consistent three-day-per week schedule. The customer will have room for 20 empty cars and 20 loaded cars, but will need these switched out to meet demand, and the NAUG needs to have an adequate interchange/yard area with PAS that does not leave the NAUG main line occupied, a condition which impedes mandated track and switch inspections.

#### 5.5.10 Housatonic Railroad Company (HRRC)

HRRC, a Class III regional short line railroad operating its Maybrook and Berkshire Lines in the western part of Connecticut, from the Derby interchange (30 miles south of Waterbury on the MNR Waterbury Branch) through Berkshire Junction, north to the CSX main east-west line in Pittsfield, Massachusetts. Inbound trains are routed through CSX's Selkirk, NY classification yard. The railroad owns a lumber distribution and bulk transfer facility, both of which are located in Hawleyville, CT. Other HRRC commodities hauled in the region include lumber, waste, corrugated paper, polyester products, and other manufactured goods. HRRC provides customer-driven local service to sidings with two crews during the day, and one at night. The railroad markets its fast delivery, resulting in lowered inventory carrying costs for its customers.

HRRC has had much discussion with PAS over past years, with respect to activating their interchange at Derby. Currently, HRRC doesn't service Derby from the west because it has no customers. PAS doesn't serve Derby from the North, and although Providence and Worcester Railroad comes up from the south, they do not have any current customers either. The only traffic at Derby is MNR's passenger trains.

Part of HRRC's business interest in reactivating the Derby interchange is that it would allow access for HRRC customers to Norfolk Southern without going through CSX. Under existing conditions, Housatonic is a captive to CSX (that is, CSX is its sole gateway to the national network). A new relationship with NS via PAS lines could mean lower rates for the railroad and its customers. If HRRC were to operate on PAS track, it would seek an interline agreement with PAS, such that HRRC and PAS would interchange cars with each other.

Strong public support for conversion of brownfields sites – notably in Newton and New Milford, which both have direct rail access-is essential to encourage rail-served business development in central Connecticut.

HRRC, like other central Connecticut operators, remains concerned about the 263K lb. weight restriction on Amtrak's Springfield Line. Additionally, the Plate F height restriction (17 feet box

car prohibition on Hartford or Springfield Line) would mean that HRRC couldn't run high roof cars on that track, and this would mean a loss of business for customers now using those cars.

## Chapter 6. Freight Rail Development Potential in the CCRS Corridor

The volume of freight shipped via rail has been increasing over the last 20 years and this trend is expected to increase 45% by 2040, nationwide. In Connecticut the movement of freight has become a significant part of the economy but very little is transported by rail. There is available capacity to increase the share of freight that is moved by rail. Based on the information laid out in previous chapters, this chapter highlights the best options for increasing that rail share.

### 6.1 Key Observations and Findings

Factors examined in this report which support new rail freight growth in the Central Connecticut Rail Study Corridor include:

- Geographic location of the corridor at the heart of a populous region, with ability to serve Boston, New York, New England, and reach national and global markets through an excellent freight rail and deep-water port network.
- Rail network with capacity to accept new freight volumes, and which is being improved with state and federal funds.
- Existing regional rail network that is receiving investment and attention regionally and nationally, from public and private sectors.
- Land availability along rail line for direct access; good potential for transload facilities
- Workforce availability.
- Interagency and interstate support, active collaboration, institutional innovation and effective funding for rail-related economic development – both passenger and freight.
- CTDOT's positive relationships with railroads, and its strong funding record for needed freight rail projects (over \$10 million invested in 2013, alone).
- Existing commodity flow profile that is suited to rail.
- Significant truck congestion, especially in Hartford.

### 6.2 Current and Potential Rail Demand

Business on the PAS Line has been fluctuating since the Great Recession. The PAS marketing team is actively seeking new opportunities for business in the corridor, and the existing conditions could change quickly.

**Current Volumes:** With available information, the Study Team estimates that current volumes (2013) on the PAS Line exceed 1,300 carloads annually. One major shipper declined to provide carload volumes during the shipper interviews held in late summer 2014, so this is a low-end estimate.

**Potential Near-Term Growth:** New business on the line, plus expansion of existing business could potentially contribute as many as 1,500-1,800 cars annually.

The commodities being moved are typical of carload movements, similar to the current traffic mix, and include:

- **Propane** – an essential regional energy source; no alternative in rural areas.

- **Lumber** – PAS access to New England lumber; Housatonic could ship on PAS Line.
- **Construction Debris** – a growth area cited by railroads; new Naugatuck customer in 2015.
- **Metals** – a growth area cited by railroads; motivated local businesses want to increase rail use.
- **Aggregate** – a significant growth area, if weight restrictions on Springfield Line are resolved.

Businesses engaged with these commodities are currently located along the corridor, and are or have been using rail to receive or send product as long as service is dependable and cost effective. Many expressed interest in diverting existing truck trips to rail if service, cost and transit time requirements can be met. Further, these commodities are in alignment with the more promising growth areas reported by other freight railroads surrounding the Study Area. Finally, they are product types that are suited to rail, and thus are not beyond the traditional commodity profile for rail freight.

Growth in rail's share of these movements will depend on the ability of PAS to deliver and pick up cars more frequently, to provide consistent and reliable service in conjunction with other freight rail partners, and to offer competitive rates. To some extent, infrastructure investment will aid that capacity, along with improved marketing, economic development, and other programs.

**Longer Term (10 years plus) Growth Potential:** On a national level, use of freight rail options, including direct and transload services, has been growing. However, the railroads' ability to successfully capture potential markets is based on their available capacity, service levels, costs, and length and consistency of transit times. In addition, weight restrictions by Metro North and Amtrak, which limit carloads to less than the national standard of 286,000 pounds (286K) and some height restrictions, also hamper the line's ability to compete for rail served customers.

However, based on recent growth and the high amenability to rail shipping, the kinds of rail-served businesses that could be attracted to the CCRS Study Corridor in the future include those who ship or receive waste/scrap, newsprint, basic chemicals, cereal grains, plastic/rubber, nonmetallic minerals, agricultural products and other commodities for rail freight growth potential. These commodities are more likely to be outbound than inbound.

Accordingly, the potential exists for longer term growth in the study corridor assuming active programs to attract rail using customers, national 286K weight and height standards (such as 17 foot clearance for "Plate F",<sup>90</sup> cars) can be achieved, and that the railroads can consistently meet customer requirements.

Table 4 summarizes the current market and commodities; projected growth areas; and additional observations relating to the railroad markets in the CCRS area.

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<sup>90</sup> Association of American Railroads Equipment Diagrams for Interchange Service, Plate F Limited interchange service adopted 1974, revised 1976. <http://www.icrr.net/plates.htm>

**Table 4. Summary of CCRS Area Railroad Markets (Current and Projected)**

<b>Railroad</b>	<b>Current Market &amp; Commodities</b>	<b>Confirmed and Potential Growth Areas</b>	<b>Additional Observations</b>
<b>Pan Am Southern (PAS)</b>	<ul style="list-style-type: none"> <li>Six active customers serving a primarily regional market.</li> <li>Lumber, propane, aggregate and stone, scrap metal, metal coils</li> <li>Propane and building products are seasonal.</li> </ul>	<ul style="list-style-type: none"> <li>New carload commodity customers</li> <li>Potential for more transload/transflow off-line facilities</li> </ul>	<ul style="list-style-type: none"> <li>PAS is actively pursuing new business.</li> <li>PAS needs to provide consistent and cost competitive service to compete with truck options to retain/attract customers on this line.</li> <li>Restricted to 263K weights, available operational windows on Metro North and Amtrak and some Plate F height issues. (This issue is local and system-wide.)</li> </ul>
<b>Connecticut Southern Railroad (CSO)</b>	<ul style="list-style-type: none"> <li>Steel beams, construction debris, lumber, malt liquors, pulpboard, bulk recyclables, nutmeg, crushed glass</li> </ul>	<ul style="list-style-type: none"> <li>Nicolock paving stones – inbound raw materials and outbound paving stones coming on line (North Haven)</li> <li>Weekly deliveries to Home Depot distribution center in Bloomfield will continue</li> </ul>	<ul style="list-style-type: none"> <li>Not affected by PAS Line infrastructure or operations</li> <li>Main obstacle is Amtrak Connecticut River Bridge (Windsor Locks) weight restriction; secondary obstacle is weight restriction at Hartford viaduct through Hartford Union Station</li> </ul>
<b>New England Central Railroad (NECR)</b>	<ul style="list-style-type: none"> <li>Steady existing business in steel, construction debris and lumber</li> </ul>	<ul style="list-style-type: none"> <li>New business from Port of New London connections</li> <li>Growth expected in steel and metals, construction debris and lumber</li> </ul>	<ul style="list-style-type: none"> <li>Not affected by PAS Line infrastructure or operations</li> <li>TIGER Grant (2014) funding 19 miles of rail upgrade</li> </ul>
<b>Central New England Railroad Company (CNE)</b>	<ul style="list-style-type: none"> <li>Griffin Line carloadings somewhat depressed, however business is improving</li> </ul>	<ul style="list-style-type: none"> <li>Home Depot wood distribution center is steady, stable customer into the future</li> <li>CNE is in discussions with several prospective customers</li> </ul>	<ul style="list-style-type: none"> <li>Main obstacle is Amtrak Connecticut River Bridge (Windsor Locks) weight restriction</li> <li>Would like to see Griffin Line extended to Bradley Field</li> <li>Interchanges with CSO and PAS in Hartford</li> </ul>
<b>Providence and Worcester Railroad (P&amp;W)</b>	<ul style="list-style-type: none"> <li>Recent growth from conventional and container freight revenue</li> <li>Growth seen in plastics, metals, salt, cement, ethanol, chemicals, propane.</li> <li>Stable volumes of food-grade products, paper and lumber</li> </ul>	<ul style="list-style-type: none"> <li>Expects growth generated by recent projects that re-established rail connection to Port of New Haven, including alcohol for export, biofuels</li> <li>2013 declines in coal expected to continue; autos expected to pick up, along with propane</li> <li>Increased aggregate in 2013 expected to continue, along with other 2013 commodity-specific growth trends</li> </ul>	<ul style="list-style-type: none"> <li>P&amp;W cites strong system of interchanges with its connecting railroads as key to recent growth, enabling it to offer competitive access to its customers.</li> <li>P&amp;W has discussed a Derby interchange with PAS, possibly for movements of aggregate and asphalt, but nothing has materialized.</li> <li>Propane has been moving by rail in the past year – not pipeline or vessels</li> </ul>
<b>Naugatuck Railroad Company (NAUG)</b>	<ul style="list-style-type: none"> <li>No regular freight traffic in 2014</li> </ul>	<ul style="list-style-type: none"> <li>New and significant customer (Cherry Hill Construction, Watertown) coming on line in 2015 will generate 1000 annual outbound carloads at project buildout</li> </ul>	<ul style="list-style-type: none"> <li>NAUG would like four tracks restored Waterbury High Grade Yard to serve its new customer</li> <li>Will need reliable PAS service to drop off and pickup of cars three times per week</li> </ul>
<b>Housatonic Railroad Company (HRRC)</b>	<ul style="list-style-type: none"> <li>HRRC owns lumber distribution and bulk transfer facility (Hawleyville,)</li> <li>Lumber, waste, corrugated paper, polyester products, other manufactured goods</li> </ul>	<ul style="list-style-type: none"> <li>No specific new growth areas cited, but stable existing business</li> </ul>	<ul style="list-style-type: none"> <li>Would like to reactivate their interchange with PAS at Derby, thereby gaining access to another Class I (NS) for its customers – and potentially reducing rates.</li> </ul>

### 6.3 Concerns and Risks to Potential Growth

In addition to uncertainty about the global and national economy, there are more localized concerns that can present risks to the growth potential for rail freight on the PAS Line. These are identified below.

**Consistent, Reliable, Frequent Service.** To retain PAS Line business at current volumes, as well as to motivate current shippers to divert more of their freight movements to rail, existing shippers are asking for better service from PAS. Depending on the shipper, this means more consistent and reliable service, and/or more frequent service. To capture new shorter-haul (500-mile or less) service, rail delivery windows on each end of the trip must approach that of trucks. Windows must be narrow (less than three hours) and consistent.

**Removing Connecticut's Weight Restrictions.** The inability to use 286,000 lb (286K) freight cars affects most (not all) of the commodities identified as potential growth areas. Transit lines, such as Metro North and Amtrak, restrict railcars to the lower and older 263,000-pound (263K) standard. The weight restrictions for train movements on the Amtrak-owned Bridge over the Connecticut River (Windsor Locks) is cited by many railroads as a major obstacle to opening up the entire state's freight rail potential. To maximize the value of addressing the weight restriction at the bridge, the incremental system-wide track upgrade now taking place must continue or be accelerated.

**Maintaining Lower Rail Costs.** To successfully divert truck freight to rail, the cost differential must be significant and must include consistent rail transit time and delivery times. This would be difficult to realize if the rail shipper is paying for the infrastructure to accommodate the shift. State/Federal actions and policies could substantially influence the outcome in this effort, through investments in freight rail.

#### Potential Passenger-Freight Service Issues.

- **Potential Amtrak Passenger Service Schedule Impacts.** Increased service on the PAS Line will require more schedule impacts to Amtrak and planned CTDOT commuter service on the New Haven to Springfield Line. The PAS train to the Waterbury Line runs from East Deerfield Yard to Plainville and numbers "EDPL". The return train Plainville to East Deerfield is "PLED".
- **PAS Line Passenger Service Potential Impacts to Freight.** If passenger service is added from Waterbury to Berlin, costs would be higher for increased track speeds, required signal system, grade crossing improvements, and increased maintenance. However, the economic development return on investment would be much higher.
- **Sufficiency of Freight Windows on Connecting Passenger Lines.** If volumes are doubled next year, and continue to grow, there are concerns about how PAS can increase service frequency and reliability to more customers on this line for freight, while meeting Metro North Railroad and Amtrak passenger schedule windows.

**Track Speed.** Although track speed has not generally been identified as an issue, it is implicated in the ability of PAS to provide reliable service. Track upgrades that could move the average

train speed from 10-15 MPH to 25 MPH will help reduce unplanned work hour-related crew changes that can disrupt service schedules

**Shipping Decisions Made Outside the Corridor.** In some cases, as interviewed stakeholders confirmed, the mode and route by which goods or materials are sent or received are determined by a firm not influenced by corridor-specific conditions.

**Ongoing Maintenance of the PAS Line.** Even if all potential projects and anticipated expansion are realized, and there is a doubling of carloads within a year, it is unclear whether this low-density line can provide enough revenue for PAS to cover operating and maintenance costs at a level sufficient to preserve the value of a potential public investment. This issue should be explored in confidential discussions with the railroad, if a decision for public investment goes forward.

## 6.4 Next Steps

Following review and discussion of this and related reports, a number of steps may be appropriate to facilitate the development of this rail asset. These are briefly listed below.

- Additional discussions with public agency, rail and business stakeholders could:
  - Be combined with a marketing program that highlights the availability of rail service and rail-served Connecticut sites for businesses.
  - Jointly develop, review or refine supportive policies, programs and funding strategies<sup>91</sup>.
  - Ensure continued discussions with MassDOT and other regional rail lines.
  - Identify best practice examples from other shortline operations to establish carloading and service metrics on the line.
  - Explore identified infrastructure concerns including Waterbury High Grade yard, Plainville Yard, Derby Interchange, PAS Line and structures upgrades; restoration of the South Berlin Wye currently planned as part of the NHHS Project.
  - Initiate discussions between freight and passenger railroads (Amtrak, Metro North) to optimize freight service windows and permissible car weights.
- Coordinate with ongoing studies and projects to avoid missed opportunities for project piggybacking:
  - E.g., ensure that upgrading to 286,000 pound weight standards for the I-84 Hartford Project and the associated Hartford Rail Alternatives Analysis, under concurrent consideration, are specifically addressed *as this project nears completion in 2014*.
  - Reconnect with Knowledge Corridor planning and implementation as part of that ARRA and MassDOT funded Project's expected start of rerouted Amtrak "Vermont" service through Springfield in late December 2014 or early 2015.

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<sup>91</sup> For example, one funding source to help with Waterbury Line improvements would be the FHWA Section 130 Grade Crossing Improvement funds each state receives. Some of that funding could be used similarly to the \$10.9M in 2012 and 2013 Sec 130 funds that were applied to the Knowledge Corridor to help offset increased project scope to rebuild the line. Clean Air/CMAQ funding may also help fund identified projects that reduce freight emissions.

## 6.5 Summary

The State Rail Plan calls for increasing freight rail usage by 20 percent with a multimodal approach to goods movement intended to decrease the carbon footprint of goods movement while supporting local and regional economic development.

However, to facilitate this increase in freight rail, there must be a strategic slate of investment accompanied by a meeting of minds on the part of key stakeholders—notably existing and potential customers, affected railroads (especially PAS), and local, state and federal government agencies. Only in this way will specific requirements for rail-served business potential be adequately met in a timely manner, and sustained into the future in order to retain and expand rail's share of freight movements.

Existing and potential rail-served customers have identified the need for better service on the PAS Line from Waterbury to Berlin, and infrastructure improvements represent a significant portion of the answer to that demand. Time is a factor here, with respect to public intervention. Allowing the rail infrastructure (and associated service levels) to languish in a suboptimal state for too long will cause shippers to divert to truck or leave the area, and will result in missed economic development opportunities, as potential new rail-served businesses locate elsewhere. Public investment could result in a virtuous cycle of investment and economic development that would leverage railroad and private sector investment in the corridor.

There is value in maintaining modal choice for shippers, if those choices are reasonably equivalent on service and cost. Such competition between modes is critical to keeping costs down and service quality high. In the end, a stronger Pan Am Southern Railroad can mean more shipping options and lower rates for corridor businesses and their customers, reduced truck-related congestion on area roads and highways, more family-wage jobs, and less greenhouse gas generated by freight.

## Appendix A: Shipper Discussion Guide

The URS team is conducting a Needs and Feasibility study for the Connecticut Department of Transportation (CTDOT) to improve freight rail operations and evaluate potential for passenger service in the Central Connecticut corridor between Waterbury and Berlin, CT, a distance of approximately 24 miles. The Team is analyzing current Pan Am Southern (PAS) freight operations and conditions along the line, as well as analyzing the potential for freight rail growth in the corridor. URS tasks include conducting a survey of existing freight rail customers to assess existing operations and determine potential for growth of the freight market. In tandem with this effort, the Team is also studying the need to implement either new passenger rail or transit service between corridor communities. Tasks include evaluating the condition of existing infrastructure and what needs to be done to bring the rail line to a state of good repair to improve freight service and potentially support passenger service; analysis of existing transit service; surveys to determine commuter travel patterns; an assessment of potential Transit Oriented Development opportunities at potential rail stations; an extensive public involvement and stakeholder outreach program; and development of service plans.

We ask for your assistance in articulating current rail freight use, current conditions and the rail freight improvements that would be most useful to your operations. Our conversation should take no more than 30 minutes.

### **Background**

1. Please tell us briefly about your company and your products.
2. Please tell us about your CT operations, particularly those that are along the Pan Am Southern corridor.
3. Where do your major inbound products come from and where are your major outbound shipments headed (e.g., within CT, within immediate multi-state area, elsewhere in North America, overseas)?
4. What freight services do you currently use to receive and ship product from this location (e.g., truck, rail)?
5. How has your business changed in the last five years?
6. How do you see your business evolving in the next five years?
7. How has your use of freight services changed in the last five years?
8. What are the four top considerations in your selection of freight transportation services, such as truck, rail, ocean and air services:
  - a. Cost
  - b. Reliability
  - c. Time Involved
  - d. Security of the Shipment/Shrinkage
  - e. The Freight Modes Used
  - f. Use of “Green”/Sustainable Transportation Options
  - g. Tracking
  - h. Other:

**Use of Rail in CT**

9. Please tell us about your current use of rail freight services – what types of service you use (tank car, box car, hopper, etc.), frequency, seasonality, etc.
10. What volume of rail freight do you move annually in CT?
11. What types of rail freight infrastructure do you have on-site (e.g., spurs, amount of car storage, switcher engines, etc.)?
12. Has the volume of rail freight that you move in CT been increasing, staying the same or decreasing?
13. What service criteria are most important to you in regarding rail freight services in CT?
14. What questions does your organization most want answered regarding rail freight operations in CT?
15. What rail freight-related improvements would be most beneficial to you?
16. Under what circumstances would you consider switching from your current receiving and/or shipment mode(s) to increased use of rail?
17. Are there any factors that would cause your organization to eliminate rail freight service as a shipping option?
18. Are there additional considerations related to rail freight operations and your company's freight needs that we know for this project?
19. Are there other individuals or companies that we should speak with as part of this project?

*Thanks very much for your help! Can we talk further with you as we proceed with our work?*