

New Hampshire Department of Transportation

New Hampshire State Rail Plan

2012



Prepared by





THE STATE OF NEW HAMPSHIRE
DEPARTMENT OF TRANSPORTATION



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I am pleased to present the 2012 New Hampshire State Rail Plan, the first state rail plan since 2001. This plan provides a vision, goals, and objectives for the state's freight and passenger rail system.

The plan provides an evaluation of the state's railroad infrastructure and service, a discussion of railroad trends and current issues, and a description of the economic and environmental impacts of the rail system in the state. Although rail traffic in New Hampshire is relatively light and has been declining, it still represents an important component of the state's economy and one that is critical to those industries that depend on rail for freight shipping. The state also derives many benefits from the two Amtrak services that operate in New Hampshire, the Downeaster and the Vermonter, as described in the plan.

The rail plan includes a series of recommended steps to strengthen the rail system in New Hampshire and increase its contribution to our economy. The plan evaluates through a benefit-cost analysis several projects that are included among the recommendations. Finally, it provides a summary of funding and financing mechanisms that exist around the country to support freight and passenger rail improvements.

The rail plan was prepared in compliance with the requirements of the Passenger Rail Investment and Improvement Act of 2008, making the state eligible to apply for federal funding to support passenger rail projects in the future.

I believe this document will be a valuable resource to elected officials, the business community, and the citizens of New Hampshire as we strive to improve and enhance our transportation system. I would like to express my appreciation to the team that prepared the plan as well as the members of the technical advisory committee who assisted the Department, and the interested citizens who attended public meetings and provided comments on the plan.

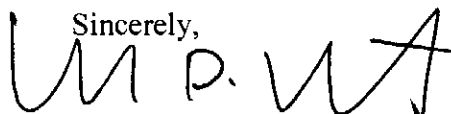
Sincerely,

Christopher D. Clement, Sr.
Commissioner



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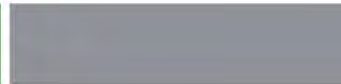
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EXECUTIVE SUMMARY

The purpose of the New Hampshire State Rail Plan (Rail Plan) is to identify and evaluate issues and opportunities related to rail transportation in the State. The Rail Plan meets updated requirements contained in the Passenger Rail Investment and Improvement Act of 2008 (PRIIA). Included in the PRIIA legislation is the stipulation that an updated state rail plan must be in place to qualify for future rail related federal funding.

There have been significant changes in the regional transportation system since the New Hampshire State Rail Plan was last updated in 2001. Multi-modal services provided by railroads, truckers, and air freight and maritime carriers move more products at lower prices to and from the marketplace than was imagined possible 20 years ago. A principal reason for continued, and in some markets expanded use of rail, is that rail is the most energy efficient and cost-effective choice for moving goods by land.

Recent rail industry changes are highlighted by the national consolidation of the larger, Class I railroads¹ and the creation of numerous regional and short line railroads. In New Hampshire these changes have led to the abandonment of or decline of service on light density rail lines. New Hampshire currently has two regional railroads and seven short line railroads that provide connections to Class I railroads.

Similarly, passenger service has changed significantly with the creation of the Amtrak Downeaster intercity passenger rail service connecting Massachusetts and Maine, including three stations in New Hampshire. Additionally, the Amtrak Vermonter and tourist railroads continue to provide passenger service within the State.

The Rail Plan development featured a thorough public involvement process that included formation of a Technical Advisory Committee and public meetings. An early product of these outreach efforts was the creation of the following Vision Statement.

The New Hampshire rail system is one that provides an efficiently utilized and well-maintained railroad system, expanded as appropriate to accommodate increases in freight and passenger demand for rail services. It is a system that is fully integrated with the national, regional and statewide transportation system, connecting the state's urban and rural communities, maximizing the opportunities for economic growth, promoting energy efficiency, and providing safe, secure and reliable transportation of people and goods.

Based on the Vision Statement, Goals and Objectives were subsequently developed to provide a framework for the organization, presentation and evaluation of the Rail Plan as well as providing a means to measure future efforts in working toward the state's vision for both freight and passenger rail.

Rail System Infrastructure and Service

The rail system in New Hampshire is currently composed of 443 route miles of active rail lines². This compares with nearly 800 route miles of active rail lines in 1980. Rail main lines provide through freight service via the regional and national rail system; these are located in the southern, western and northeastern segments of the state. Main lines connect to major branch lines serving the Nashua, Manchester, and Concord areas, the Rochester and Ossipee areas, and the Portsmouth area.

¹ Class I Railroads are defined as line haul freight railroads having 2010 operating revenue equal to or greater than \$398.7 million. There are no Class I Railroads operating in New Hampshire.

² The American Association of Railroads develops state rail mileage totals that are widely used; however the AAR calculations include trackage rights in their mileage totals, which double counts some track segments. Including trackage rights, the New Hampshire total would be 470 miles.



On the passenger rail system, over 500,000 passengers annually travel on the Amtrak Downeaster and Vermonter services, with over 200,000 of these passengers originating or ending their trips in New Hampshire. Additionally, tourist rail services in the state attract over 170,000 riders per year.

Since 2001, fewer than three miles of track have been officially abandoned, a reduction in abandonments from previous decades. Over several decades, the State has purchased over 400 miles of rail corridors for preservation. Currently, the State of New Hampshire owns 330 miles of abandoned railroad corridors, which are managed for possible future recreational or rail use.³ The most noteworthy pending abandonment is the 10 mile Hampton Branch owned by Pan Am Railways between Portsmouth and Hampton. This branch line is a segment of the former Main Line-East that extended from Hampton to Seabrook and Newburyport, the current northern terminus of commuter rail service to Boston.

Freight Transportation Trends and Commodity Flow

In 2009, 16.1 billion tons of freight by all modes were shipped in the United States and 37.4 million tons, excluding through traffic, were shipped in New Hampshire.⁴ Nationally, rail carries 11.1 percent of all traffic when measured by weight. In New Hampshire, rail transports approximately 7.3 percent of all freight tonnage. While a smaller share of New Hampshire freight is transported by rail than the national average, it still accounts for an estimated 4.7 million tons of freight per year in the state.⁵

To put the amount of freight transported by rail in the state into perspective, it is helpful to consider the rail tonnage in equivalent truck loads. A 75-car freight train has the capacity of 280 trucks. Thus, the annual movement of 4.7 million tons by rail equates to more than 188,000 trucks on the state's highways. If the freight currently carried by rail was instead all handled by trucks, over 7.4 billion ton miles⁶ would be added to the state highway system.

When evaluated based on weight of commodities, through movements not originating or terminating in New Hampshire total 79 percent of all rail traffic. The high percentage of through movements in the state demonstrates that New Hampshire rail lines that connect to national rail routes provide a viable and reliable transportation mode. Inbound rail shipments account for 18 percent and outbound shipments 2 percent of total rail shipments in the state. The remaining 1 percent of rail traffic in New Hampshire is made up of miscellaneous commodities moving within, into or out of the state.

The primary inbound commodities include coal and petroleum products, which account for 14 percent of all rail movements in the state. The largest outbound movement, at 2 percent by weight, is made up of the commodity categorized as sand, gravel, and aggregate. The top inbound commodity in value is electronics, followed by gasoline, mixed freight, textiles, food products, machinery, plastics and chemical products. From this observation, it can be concluded that rail system in the state supports a relatively broad segment of the state's economy.

The analysis of the state rail system also included an evaluation of the trends and projections for freight movements. Between 1997 to 2009, the peak New Hampshire rail ton volume occurred in 2000 with more than 8.7 million tons transported into, out of, and through the state. Between 2000 and 2009 rail volumes in the state decreased 46 percent. In contrast, US rail volume grew 10.9 percent over the same period. The principal reasons for the decline are downsizing of the state's pulp and paper industry and lower demand for aggregates used in New England construction projects. Stakeholders interviewed for this plan feel that the rail trend in the state is turning in a positive direction. Further, based on Freight

³ New Hampshire State Trails Plan, May 20, 2005, New Hampshire Department of Transportation.

⁴ 2009 Freight Analysis Framework (FAF).

⁵ 2009 FAF, Association of American Railroads, 2009 rail traffic originating, terminating or passing through the state.

⁶ This estimate assumes 15 to 18 tons of freight is transported by one truck.



Analysis Framework (FAF) forecasts and the NH Mode Share Index Based on Weight, rail tonnage in the state is expected to grow significantly in the next 30 years.

Economic and Environmental Impacts

Benefits from the rail system are realized through both freight and passenger operations, primarily through jobs and related spending by rail-dependent businesses in the state.

In 2009, the Gross Domestic Product (GDP) of New Hampshire was \$59.1 billion. Transportation and warehousing industries contributed \$871 million to the GDP, which is 1.5 percent of the total state GDP. In addition, the transportation industry affects the state and regional economies in other ways:

- According to the US Bureau of Labor Statistics, freight dependent New Hampshire industries directly employ more than 245,000 people,
- Rail shipping is estimated to support 17,000 of those jobs, and these directly rail-supported jobs indirectly support other jobs in NH, and
- New Hampshire freight railroads directly employ approximately 200 people.

In addition to employment, rail service provides secondary benefits to the state such as reduced highway congestion, improvements in air quality, and support for economic development. Each of these benefits is associated with both freight and passenger operations. For example, highway congestion is reduced by freight transported by rail instead of by truck and the diversion of automobile users from single-occupancy vehicles to passenger trains. In both cases, air quality benefits are realized. Similarly, discussions with interested stakeholders affirmed that freight and passenger transportation options afforded by rail are viewed as a significant component in maintaining and increasing economic activity in the state.

Rail Issues and Trends

New Hampshire's rail customers, many of which support manufacturing jobs in the state, depend upon freight rail to sustain their businesses. In some cases there are no viable transportation alternatives. However, the current state of freight rail service in New Hampshire is not robust. Declining overall volumes have led to reduced local service frequency, longer transit time, pick-up and arrival unpredictability and increased inventory and operating costs. This places New Hampshire businesses at a disadvantage relative to other regions.

One significant issue that has contributed to reduction in rail service in the state is the use by major railroads of heavier freight cars with a gross weight of 286,000 pounds, heavier than the minimum standard of 263,000 pounds. This provides increased efficiency, but since most New Hampshire rail customers are located on branch lines that cannot handle heavier cars, they face shipping delays, extra costs for transloading, or penalty costs for partially filling of the higher capacity cars to stay within track limitations.

Another constraint for rail in the state is vertical bridge clearance that restricts the use of intermodal double stack container trains. Nationally, intermodal container traffic is the fastest growing segment of rail traffic. The only rail line in the state with full double stack clearance is the St Lawrence & Atlantic that serves the northern part of the state. Major ongoing and proposed initiatives to improve clearances in Massachusetts and New England could provide opportunities for New Hampshire to realize double stack intermodal routes that could serve the southern portion of the state.

Although the recent trends in New Hampshire for rail service and usage have not been very positive, opportunities for improvement in the rail system are possible. In addition to the improvements that could be realized from changes in the car weight capacities and vertical clearance improvements, the rail



industry is expected to realize increased business due to external factors including rising fuel costs and driver shortages. Also, rail lines in the state are not being operated at full capacity. This provides the means for railroads to respond to growth opportunities without the need for extensive delay and costs often associated with environmental review and mitigation required for highway capacity improvements.

Rail System Recommendations

As noted above, rail provides an important service to the state in the movement of freight and passengers. The Rail Plan includes recommended steps to improve existing services and support the railroad network in the state.

The recommendations for freight and passenger services have been developed with the objective of being consistent with current and anticipated future policies and funding limitations within the state. Each recommendation allows for independent consideration but is consistent with the other recommendations. This allows rail system improvements to be evaluated and implemented in either the short or long term.

A summary list of recommendations, identified by issue category, is presented below.

Table ES-1: New Hampshire Rail Plan Recommendations Summary

Category
Recommendation
Promote Reduction of Carload Weight Restrictions
Support grant funding for eliminating carload weight restrictions on the St. Lawrence and Atlantic Line.
Collaborate with Maine and Massachusetts to raise the weight limits on MBTA-owned lines in Massachusetts that serve New Hampshire
Promote Improved Clearances to Support Intermodal Traffic
Continue to design overhead bridges with 22'-0" clearance.
Coordinate with New England states to develop a region-wide approach to eliminating vertical constraint on New England main lines
Continue Safety/Security Program
Continue supporting maintenance/upgrade of at-grade crossings through allocation of federal funds to grade crossing improvements
Continue NHDOT track inspection program
Continue NHDOT coordination with industry and federal rail security programs
Promote Development of Freight Distribution Areas
Advance plans for development of freight intermodal facility in southern New Hampshire
Provide technical support to identify and plan for freight distribution centers along rail lines
Promote Investment in Branch Lines
Support track and bridge maintenance on state-owned lines
Support grant funding for branch line upgrades



Category
Recommendation
Develop Industrial Rail Access Program
Initiate program to provide financial support (in partnership with shippers/railroads) for infrastructure improvements that increase rail access
New England Regional Coordination
Participate in regional coordination efforts to plan and improve the New England railroad network
Preserve Rail Lines
Continue policy of acquiring abandoned rail lines with potential for future use
Ensure that state-owned abandoned rail rights-of-way are available for future railroad use
Rail Program System Monitoring/Planning
Continue NHDOT program of rail system monitoring and planning to identify ways to best leverage railroad assets for the state
Establish Shipper Training/Support by State Officials
Initiate program to provide information to shippers on how to utilize rail services
Existing Passenger Rail Services
Identify approaches to assist with implementation of Service Development Plans for the Amtrak Downeaster and Vermonter services.
Shared Freight/Passenger Corridors
Support grants to fund improvements to shared freight/passenger corridors
Transit Supportive Land Use
Encourage Transit Oriented Development
Tourist/Excursion Services
Support Tourist/Excursion Rail Services
Passenger System Expansion Opportunities
Implement recommendations of studies of the New Hampshire Capitol Corridor
Implement recommendations of pending study of the Plaistow Commuter Rail Extension

Investment Strategies

Some of the recommendations included funding for possible improvements. The Rail Plan presents evaluations of the investment strategies for these recommendations through the use of benefit-cost ratios that compare the types of benefits that could be realized against the potential project costs. The benefit-cost analysis is based on a multiple year timeline. The projects evaluated included both freight and passenger services and are listed below.



Table ES-2: Projects Evaluated as Investment Scenarios

Recommendation Category	Proposed Project
Promote Reduction of Carload Weight Restrictions	Improvements to St. Lawrence and Atlantic Line
Promote Investment in Branch Lines	Improvements to the Conway Branch
Eliminate Vertical Clearance Constraints	Clearance improvements to Pan Am Railways main line
Develop Industrial Rail Access Program	Example of assumed conceptual typical project that would be eligible for consideration in an Industrial Rail Access Program
Promote Development of Freight Distribution Areas	Advance plans for development of freight intermodal facility in southern New Hampshire
Passenger Rail Operations	Operation of Amtrak Downeaster Service through New Hampshire

All of the freight rail investments evaluated are expected to generate benefits that exceed costs, suggesting that the proposed investments are economically justifiable. The benefit-cost ratios for the freight rail projects ranged from 2.4 to 4.3, assuming a five percent discount rate. A positive ratio was also found when the Amtrak Downeaster was assessed. This assessment considered the benefits and costs associated with a year of operation in order to provide a perspective of the current value of the service to New Hampshire.

Rail Funding and Financing

State rail plans are expected to identify funding opportunities for potential investments to improve the rail system. These could be a combination of public and private funds, and will vary depending on the opportunity.

Most sources include funds for both capital and operating costs, to cover both construction of infrastructure or purchase of equipment, as well as the costs of maintaining and running service. Several potential funding options are available for either freight or passenger projects or for projects with combined freight and passenger benefits and objectives. The available funding options depend on the details of the specific project or need.

Freight Rail Funding

The primary source of funding for freight rail operations and improvements across the nation is capital from the private railroads and shippers that own and use the railroad. The rail system, unlike other transportation modes, does not have a dedicated federal funding source. Most federal funding programs for rail are “discretionary” and awarded on a competitive, nationwide basis. No state or railroad is guaranteed to receive federal rail funding.

The following federal programs are most frequently used to support freight rail improvements.

- Highway-Rail Crossing Program
- Rail Line Relocation and Capital Grant Program
- Railroad Rehabilitation and Improvement Financing Program
- Transportation Infrastructure Finance and Innovation Act



State of New Hampshire Rail Programs

Three state sources have been used in the past to support capital improvements on privately owned rail lines in New Hampshire. These are:

- The Rail Line Revolving Loan Fund – A fund established with state bond funds in 1993 and augmented in 1997. The fund is used to provide 20 year loans to short line and cog railroads for capital improvements.
- The Special Railroad Fund - This revolving fund receives revenue generated through railroad leases and user fees and other sources and supports the maintenance and repair of state-owned rail lines.
- State Bonds – Funds from state bonds have been used for the purchase of abandoned rail lines and for other specific rail line capital improvements

Passenger Rail Funding

The nature of the passenger rail service determines its eligibility for federal funding. The U.S. Department of Transportation classifies passenger rail services as either:

- Commuter rail service, which is defined by the US DOT as: short-haul rail passenger transportation in metropolitan and suburban areas usually having reduced fare, multiple-ride, and commuter tickets and morning and evening peak period operations, or
- Intercity passenger rail service, which means rail passenger transportation, except commuter rail passenger transportation.

The primary source of federal funding assistance used to develop and initiate commuter rail service is the highly competitive FTA 5309 (New Starts) program. The Downeaster received FTA New Starts funding for the start-up of the service.

Recently, the FRA has created the Capital Assistance to States - Intercity Passenger Rail Service program that provided grants to states to support improvements for existing or expanded intercity passenger rail service. Since that time other funding has been made available through the American Recovery and Reinvestment Act of 2009 and the High Speed and Intercity Passenger Rail Program.

Most passenger rail service requires annual operating support that typically is from local or state sources. The one federal source for passenger rail operating funds is the Congestion Mitigation Air Quality (CMAQ) Program. Funds from this program can typically be used for the start-up costs associated with operations in the first three years.

The recommendations presented above were prepared with the recognition that state funds for rail projects have been, and are anticipated to be, limited. State law requires that expenditures of state or federal funds on passenger rail be approved by the State Legislature.

Conclusion

New Hampshire's active freight rail network remains an important component of the state's transportation network. The 58,000 rail carloads moved annually on the network equates to approximately 300,000 trucks that would otherwise be on New Hampshire highways. Rail service is essential to those industries that rely on it to deliver commodities such as bulk or hazardous cargoes economically. While freight rail volume has dropped by about 45 percent over the past decade, the state's rail network remains largely intact. So long as it remains available for rail use, it provides network capacity to handle forecasted freight growth, without sole dependency on highways. While it is unlikely that rail freight volumes will increase significantly in the short-term, it is important to take appropriate actions now to retain and stabilize the existing base volume while evaluating the long-term potential for



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increasing volume. There are industries that will locate or expand in New Hampshire only if there is an active, viable freight rail system.

Over 200,000 trips are made to or from New Hampshire each year on Amtrak passenger rail services. These trips provide improved access to jobs for employees and an alternative to driving on increasingly congested roadways, leading to a better quality of life for New Hampshire residents. Passenger rail service also supports the state tourism industry, aids student recruitment at UNH, and helps revitalize downtowns in rail-served communities. These and other benefits of passenger rail will grow more important in the future, and New Hampshire should take steps to retain and grow its passenger rail service.

The rail system provides important advantages for passenger travel and freight shipping needs. Effective, targeted investment in and management of this resource are essential to maintain the New Hampshire rail system as part of a complete, well-rounded transportation system. The recommendations presented in summary above and detailed in the Rail Plan are aimed at realizing the greatest benefit from the rail network for the residents and businesses of New Hampshire.



1. INTRODUCTION

The New Hampshire State Rail Plan (Rail Plan) is intended to identify and address issues and opportunities related to rail transportation in the state. The Rail Plan development provides a process through which the state can define its vision for rail and develop goals and objectives that will help achieve that vision.

The Rail Plan is an update of the 2001 New Hampshire State Rail Plan. It also serves to fulfill the requirements of the Passenger Rail Investment and Improvement Act of 2008 (PRIIA), which was signed into law in October 2008. PRIIA outlines a set of requirements for state rail plans that must be fulfilled for a state to become eligible for Intercity Passenger Rail Capital Assistance grants authorized in PRIIA. The Rail Plan is consistent with the federal planning guidelines contained in Title 49, Part 266 of the Code of Federal Regulations.

There have been significant changes in the transportation system serving New Hampshire and the northeastern United States over the past decade. In addition, concerns about the environment and the economy have influenced public views and political sentiment regarding transportation. These changed attitudes, along with higher energy costs, have contributed to altered travel patterns and freight logistics in a shift toward greater use of rail. Ridership has increased on passenger rail and public transit services, and freight rail has experienced an increase in both use and investment on a national level.

Globalization, a significant growth in trade volume, and rapid technological innovation are changing markets and the way goods are transported. Greater volumes of goods are moving within new global and regional trading patterns and over new routes and modes. New Hampshire is served today by a much greater variety of freight and passenger transportation services than just 30 years ago. Multi-modal services provided by railroads and truckers, air freight and seaport services move more products at lower prices to and from the marketplace than was imagined possible 20 years ago.

Freight railroads are recognized as the most energy efficient choice for moving goods by land. According to the American Association of State Highway and Transportation Officials (AASHTO), if one percent of long-haul freight that is currently transported by truck was shifted to transport by rail, national fuel savings would be 110 million gallons per year and annual greenhouse gas emissions would fall by 1.2 million tons. Expressed another way, the U.S. Environmental Protection Agency (EPA) estimates that every ton-mile of freight that moves by rail instead of highway reduces greenhouse gas emissions by two-thirds.

The rail industry has changed over the past twenty years with the consolidation of the larger Class I railroads⁷ and the creation of numerous regional and short line railroads. In New Hampshire these changes have led to the abandonment of light density rail lines and creation of regional and short line freight rail operations. Regional railroads⁸ operating in New Hampshire are:

- Pan Am Railways
- New England Central Railroad

⁷ Class I – Railroads are defined as line haul freight railroads having 2010 operating revenue equal to or greater than \$398.7 million. There are no Class I Railroads operating in New Hampshire.

⁸ Regional railroads have 2010 operating revenue between \$40 million and \$398.7 million; or operate at least 350 miles of railroad and have revenues of at least \$20 million.



Short line railroads⁹ are:

- St. Lawrence and Atlantic Railroad
- Claremont Concord Railroad
- New England Southern Railroad
- New Hampshire Northcoast
- New Hampshire Central Railroad
- Milford-Bennington Railroad
- Green Mountain Railroad

Similarly, passenger service has changed significantly in the last 20 years. Of greatest interest is the creation of the Amtrak Downeaster intercity passenger rail service connecting Massachusetts and Maine, including three stations in New Hampshire. The Amtrak Vermonter also provides rail service in New Hampshire at Claremont along with service to Brattleboro, Bellows Falls, Windsor and White River Junction stations in Vermont that are popular with New Hampshire residents. Finally, there has been continued utilization of the state-owned rail lines for tourist passenger rail services, an important component of the tourist economy of the state, by the Conway Scenic Railroad and the Plymouth and Lincoln Railroad.

The New Hampshire State Rail Plan begins with presentation of the Vision, Goals and Objectives for the State's rail system. This is followed with a description of the outreach process that was undertaken to gather information, define goals and objectives, and develop the plan's recommendations. Chapters 2 through 4 include a description of the existing rail system, the commodities it moves and its impacts on the economy and environment of New Hampshire. In Chapter 5, specific trends and initiatives are identified that relate to the future of the state rail system. Recommended projects and an analysis of those projects are included in Chapters 6 and 7. Chapter 8 presents a description of potential ways to fund and finance rail system improvements and the set of findings and recommendations. The conclusions of the Rail Plan are presented in Chapter 9.

⁹ Short line railroads are the line haul railroads that do not qualify as a Class I or Regional railroads. According to the Association of American Railroads, 75 percent of those railroads operate fewer than 100 miles of railroad line.



1.1 Vision Statement

In July 2010, the New Hampshire Department of Transportation completed the New Hampshire Long Range Transportation Plan 2010-2030. As part of that extensive planning effort the following vision for transportation in New Hampshire was developed.

New Hampshire Long Range Transportation Plan Vision

Transportation in New Hampshire is provided by an accessible, multimodal system connecting rural and urban communities. Expanded transit and rail services, a well-maintained highway network and airport system provide mobility that promotes smart growth and sustainable economic development, while reducing transportation impacts on New Hampshire's environmental, cultural, and social resources. Safe bikeways, sidewalks, and trails link neighborhoods, parks, schools, and downtowns. Creative and stable revenue streams fund an organization that uses its diverse human and financial resources efficiently and effectively.¹⁰

This establishes the goals for all modes of transportation in the state and therefore was used as the basis to identify a vision for the New Hampshire Rail System. The purpose of developing a vision for rail is to clearly articulate the desirable characteristics of the rail network to unify the actions of rail stakeholders and policy-makers. This effort provides the opportunity to identify challenges and opportunities as well as develop high-level strategic guidance in developing specific goals and objectives for the rail system. The vision has been developed cooperatively between the New Hampshire Department of Transportation (NHDOT), a Technical Advisory Committee and members of the public. The Technical Advisory Committee consisted of the primary freight and passenger rail stakeholders in New Hampshire and is further described in Section 1.4.1.

New Hampshire Rail Vision Statement

The New Hampshire rail system is one that provides an efficiently utilized and well-maintained railroad system, expanded as appropriate to accommodate increases in freight and passenger demand for rail services. It is a system that is fully integrated with the national, regional and statewide transportation system, connecting the state's urban and rural communities, maximizing the opportunities for economic growth, promoting energy efficiency, and providing safe, secure and reliable transportation of people and goods.

1.2 Goals and Objectives

Goals provide a framework for the organization, presentation and evaluation of a study. For the Rail Plan, goals have been identified that will fulfill the rail vision. New Hampshire will work to accomplish these goals through the development of specific policies and actions. The following goals have been developed to help achieve the state's rail vision.

- Maintain the New Hampshire rail system in a state of good repair
- Provide a rail system that is financially stable and sustainable
- Expand the rail system and its capacity to promote growth in freight and passenger demand
- Provide a rail system that is environmentally supportive and sustainable
- Facilitate the ability of New Hampshire railroads to be competitive regionally, nationally, and globally
- Support economic initiatives

¹⁰ NH Long Range Transportation Plan 2010-2030. NHDOT, July 2010.



- Realize public benefits for public investments
- Encourage public-private partnerships related to rail services
- Educate New Hampshire residents and businesses on the rail system in New Hampshire

Each goal is associated with a specific action or policy intended to help achieve the goal. These objectives are necessary for implementation of the state's vision for rail and are presented below.

Goal: Maintain the New Hampshire rail system in a state of good repair

Objective:

- Maintain passenger and freight rail infrastructure including tracks, bridges, railroad tunnels, train signal and communication systems in functional condition
- Foster and develop programs to assist in major rehabilitation/replacement of obsolete bridges, structures, rails, ties, and other infrastructure required to maintain current operations
- Preserve and protect active and abandoned railroad ROWs having significant potential for future transportation or other public use
- Enhance safety and security of the rail system
- Improve reliability of the rail system

Goal: Provide a rail system that is financially stable and sustainable

Objective:

- Seek adequate and stable funding, including federal assistance, for rail projects
- Structure fares and pricing to maximize ridership while sustaining financial viability of passenger rail in New Hampshire
- Support railroads actions to realize a system-sustaining rate-of-return on capital
- Maintain private sector ownership/ operation of freight railroad lines
- Consider rail funding alternatives "best practices" in other states

Goal: Expand the rail system and its capacity to promote growth in freight and passenger demand

Objective:

- Increase freight rail market share through efficiency and capacity improvements
- Evaluate and develop new or additional passenger services where viable
- Foster intermodal passenger transportation

Goal: Provide a rail system that is environmentally supportive and sustainable

Objective:

- Reduce emissions through expanded use of rail
- Enhance energy efficiency through expanded use of rail
- Maintain a safe transportation option for movement of hazardous materials
- Promote improvements to the rail system that minimize or mitigate the impacts of rail service to the social and natural environment

Goal: Facilitate the ability of New Hampshire railroads to be competitive regionally, nationally, and globally



New Hampshire State Rail Plan

Objective:

- Promote efficient operations of New Hampshire's rail system so that it is an interconnected and integrated portion of the state, regional, and national multimodal transportation system
- Support the improvement of freight intermodal transportation movements to promote the most efficient and productive utilization of all modes in New Hampshire
- Increase rail share of freight traffic through improved highway-rail and water-rail intermodal connections
- Remove current weight and clearance restrictions as appropriate so that New Hampshire's and New England's railroads will be competitive as North American railroads adopt a standard of 286,000 pound gross weight rail cars

Goal: Support economic initiatives

Objective:

- Encourage local/regional planning efforts that link transportation and land use to help reduce sprawl and improve utilization of existing transportation systems
- Work in partnership with neighboring states to develop initiatives that promote connectivity to the national rail system and the global market place
- Increase employment potential with new or improved rail services and intermodal facilities
- Increase the utilization of the rail network through increasing the number of rail served businesses

Goal: Realize public benefits for public investments

Objective:

- Make freight rail transportation more efficient and effective, taking trucks off the road, reducing accidents, improving safety, and helping communities become more livable
- Improve mobility for New Hampshire residents by providing rail access, as appropriate, to areas of the state and connecting to other regional rail systems
- Decrease highway maintenance expenses to federal, state and local governments by shifting freight and passenger traffic off the highways and onto rail
- Improve financial livability for New Hampshire residents by offering an alternative to single-occupant vehicles
- Help to integrate all modes of transportation, including highway, aviation, maritime, and rail, to support connectivity and a balance by mode

Goal: Encourage public-private partnerships related to rail services

Objective:

- Involve the private sector in rail planning early on in the process to gain creative and efficient ideas and effective use of resources
- Facilitate public and private sector cooperation in identifying capital for projects that benefit both sectors

Goal: Educate New Hampshire residents and businesses on the rail system in New Hampshire



Objective:

- Provide information to New Hampshire residents and businesses about both freight and passenger rail in terms of economic impact, tourism opportunity, mobility and other benefits

The goals and objectives for the New Hampshire rail system will be utilized to assess the set of recommended projects and the overall Rail Plan findings and recommendations.

1.3 Balanced Scorecard

NHDOT has established a new strategic initiative known as the Balanced Scorecard to link plans with actions, to achieve well-defined long-term objectives, measure progress along the way, and communicate progress clearly internally and externally to its partners and customers.

Performance Measures established as part of the Balanced Scorecard track progress in achieving objectives of NHDOT. The goal is for NHDOT to measure current year performance against targets, and to set future year performance targets based on a prioritization of limited resources. The Balanced Scorecard includes Performance Measures related to rail.

One rail related Performance Measure is associated with the maintenance of rail lines capable of 40 mph speeds. The active railroad lines in New Hampshire are classified as to condition according to a system established by the Federal Railroad Administration (FRA). The class of track is a measure that provides an indication of the general condition of railroad track infrastructure. FRA Class 3 track allows operation of freight rail at up to 40 mph and passenger rail at up to 60 mph.

Track maintained for Class 3 operation would provide satisfactory performance of both freight and passenger service in nearly all cases. Establishing goals for the miles of active track at Class 3 would provide an effective measure of overall condition of the railroads in the state, recognizing that track is maintained and repaired by private railroad companies primarily with private capital. Currently there are approximately 100 miles of track maintained to FRA Class 3 and although it is projected that the mileage of FRA Class 3 track will not change, it is the goal of NHDOT to increase the mileage by 80 percent from 100 to approximately 180 miles by 2016. This goal reflects proposed track upgrades on Pan Am's New Hampshire Main Line and the New Hampshire Northcoast's Conway Branch.

Another rail related performance measure is related to increasing mobility in the state through greater rail ridership. Ridership is a common measure of the utilization of transit service nationwide, including passenger rail. Ridership measures one-way trips, i.e. boardings. In New Hampshire, passenger rail service is provided by Amtrak on the Downeaster and Vermonter services supported by Maine and Vermont, respectively. Amtrak reports ridership on a monthly basis for these services. Increasing ridership shows that more people are riding on passenger rail, either because the existing services are attracting more riders, or because these services have expanded through additional trains, for example, or a combination of the two.

Ridership on both services has shown significant growth in recent years. Establishing goals for future ridership will provide a measure of the progress this service is making in increasing the personal mobility of people in New Hampshire. Currently annual rail ridership includes approximately 200,000 trips to and from New Hampshire stations, it is projected that ridership will increase by 3 percent per year. However there are several projects on each of the Amtrak corridors, as well as plans for other services in the state that may increase rail ridership dramatically, including the New Hampshire Capitol Corridor service and MBTA Commuter Rail extension to Plaistow. The NHDOT goal for rail ridership in 2016 is for over 1 million trips, which would include implementation of these two services.



1.4 Outreach

An important component to the development of the Rail Plan is the incorporation of input from stakeholders and the public into the plan. In order to achieve this critical input, an outreach plan was developed with the two principal goals of informing the public and key stakeholders about the purpose and content of the Rail Plan; and receiving input from the public and key stakeholders about issues and needs related to the rail system in New Hampshire. The input provided through this process has been critical to identifying and shaping the investment and policy strategies proposed in the plan.

A variety of approaches were taken to reach out to stakeholders and the public to ensure that their thoughts and ideas were included. The outreach program included the following primary activities:

- Public Meetings
- Technical Advisory Committee
- Stakeholder Interviews
- Rail Plan Website

In addition, a list of “interested parties,” was developed through the website, media coverage and public meetings. Meeting notices and Rail Plan Updates were distributed to the individuals included on this list throughout the project.

1.4.1 *Technical Advisory Committee*

In collaboration with NHDOT, a Technical Advisory Committee (TAC) was formed. This group consisted of the primary freight and passenger rail stakeholders in New Hampshire and served in an advisory capacity to NHDOT. TAC members provided guidance on issues and strategies, as well as offered feedback on all major findings and documents produced. TAC members included representatives from appropriate state agencies, such as the New Hampshire Rail Transit Authority (NHRTA) and selected Metropolitan Planning Organizations (MPO) and Regional Planning Commissions (RPC), as well as freight carrier representatives and operators of freight and passenger services.

TAC meetings were held on March 24, 2011, June 15, 2011, and March 16, 2012. In addition to the TAC meetings, briefings on the Rail Plan were provided to the NHRTA.

Technical Advisory Meeting #1/March 24, 2011: In this introductory meeting, the consultant staff provided an overview of the study goals, objectives and process; presented a draft Vision Statement, and gave an overview of the state’s existing conditions in terms of rail. Comments on the presentation included the desire to make the Statement more proactive, to include sustainability goals, and to emphasize the need for system reliability. There was also discussion that New Hampshire does not have programs that participate financially in freight and passenger rail operations, and that a decision to do so would be helpful in supporting rail’s contributions to the state. Breakout groups discussed a series of questions designed to help NHDOT and the consultants understand the economic impact of rail on New Hampshire’s economy.

Technical Advisory Meeting #2/June 15, 2011: The purpose of the second TAC meeting was to update the committee on stakeholder Interviews and findings to-date, and to discuss these and next steps. A revised Vision Statement was presented and accepted with no changes. Many comments from the committee included the importance of procuring as much detailed shipping data as possible. The stakeholder interviews detailed the complementary nature of freight and passenger rail and the areas in which rail is critical to certain kinds of business. The committee members were able to corroborate this;



additional discussion of the nature of truck shipping versus rail shipping and the benefits of intermodal movements took place.

Technical Advisory Meeting #3/February 27, 2012: The purpose of the third TAC meeting was to present draft recommendations and get TAC feedback. The committee generally agreed with the recommendations, commenting on the importance of providing quantitative and qualitative support and offering suggestions as to how some of the study data could be supplemented.

1.4.2 Media and Web Outreach:

The print and electronic media were a strong component of the public outreach program. A general press release to statewide media announced the launch of the plan in March of 2011, noting the purpose of the plan and the need for public input. At the same time, a webpage was launched as part of www.NHDOT.gov that included an overview and timeline for the study¹¹. Detailed meeting minutes for all of the TAC meetings as well as each of the public meetings were also made available to the public via the study web page.

Prior to both sets of public meetings, calendar listings were sent to statewide print and electronic media, and a statewide press release was sent detailing the times, locations and topics of the meetings. A local press release was additionally sent to the media covering each meeting location closer to the meeting date, with follow-up calls made to reporters asking for specific coverage prior to the meeting. This media outreach also encouraged the public to comment via website, and for both sets of meetings, members of the public took advantage of this opportunity as noted by the comments contained in the appendix. (See Appendix A for comments submitted via website). This methodology also provided a list of interested parties to whom updates on upcoming meetings could be sent on an individualized basis.

Additionally, the TAC was a major force in disseminating public meeting information and making sure key stakeholders were aware of the plan, its recommendations, and the opportunity to comment. Prior to each of the public meetings, electronic flyer containing meeting information was made available to TAC members as well as Interested Parties, asking them to forward the flyer on to their own email lists.

1.4.3 Public Meetings

Two sets of public meetings were held during development of the Rail Plan. The first set was held in April 2011 and the second set was in February and March 2012.

The purpose of the first set of public meetings, held in Concord and Littleton, was to generate input related to existing rail conditions and trends. Opportunities associated with existing infrastructure were discussed as well.

The second set of meetings was provided to offer a forum for presenting the draft Rail Plan findings. Feedback from the public was gathered at those meetings and incorporated into the Rail Plan, as appropriate.

The meetings were developed in accordance with PRIIA requirements for a formal rail plan hearing. Detailed meeting minutes were posted on the NHDOT web site in order to broaden public access to the meeting discussion.

Public Meetings #1 and #2/Concord, Littleton: These presentations, similar to the first TAC meeting, provided the public with information on how the planning process would unfold, and the current

¹¹ <http://www.nh.gov/dot/org/aerorailtransit/railandtransit/rail-plan.htm>



existing conditions information as compiled by the consultants. The Vision Statement was presented as it had been amended by the TAC. Response to these presentations was low-key; the public agreed with the Vision Statement and primarily wanted to show their support of continuing freight rail service and expanding passenger rail service in New Hampshire.

Public Meetings #3, #4 and #5: Nashua, Portsmouth and Berlin: These presentations, similar to the third TAC meeting, provided a summary of the draft Rail Plan recommendations. Attendance at all of these meetings was robust, with much positive feedback about the potential impact of rail to New Hampshire's economy. There was overall support for the Rail Plan recommendations, with some comments that the recommendations need to be even stronger in order to maximize the benefits that a stable and enhanced rail system could provide to New Hampshire businesses and residents.

1.4.4 Stakeholder Interviews

Interviews of railroads, rail shippers, receivers and economic development organizations were held to facilitate a better understanding of the state's rail system. These interviews provided information related to the current rail infrastructure, its limitations, its role in the local and regional economies, and the opportunities associated with an enhanced rail system.

Passenger and freight railroad operators were interviewed to help gain a better understanding of their existing operations and their business plans, assuming no significant improvements to the existing infrastructure. In addition, potential opportunities associated with enhanced rail service were also discussed. Interviews with managers of other transportation modes in New Hampshire were also interviewed to gain insight on how rail services, passenger and freight, interact within New Hampshire.

Numerous one-on-one interviews were also conducted with shippers, receivers, and carriers. These interviews provided critical private sector perspective on goods movement in New Hampshire, current issues or constraints, as well as future trends and opportunities.

Finally, economic development experts were consulted. The primary focus of these interviews was to better understand the role of rail transportation in the state's economy and economic development efforts.

Passenger Railroad Interviews

Interviews held with passenger rail providers focused on existing operations, any limitations to future growth, and anticipated plans going forward. General issues, trends and opportunities raised through the interviews are provided in the Rail Opportunities section of the Rail Plan.

The following are the passenger railroad stakeholders interviewed:

- Plymouth and Lincoln Railroad (owners of the Hobo & Winnepesaukee Scenic Railroads)
- Conway Scenic Railroad
- Massachusetts Bay Transportation Authority
- Vermont Agency of Transportation
- Northern New England Passenger Rail Authority

Freight Stakeholder Interviews

In keeping with the state's vision for an efficiently utilized and well-maintained railroad system, the rail plan consultant team evaluated the current state of New Hampshire's freight rail operations through personal interviews with key stakeholders. Formal interviews were held with 15 freight rail stakeholders, comprised of current rail customers, rail carriers and former rail customers.



Interviews were focused on current users and providers of rail service in New Hampshire to specifically determine current freight rail traffic patterns, issues relative to current usage, opportunities for growth, and potential barriers to growth. Accordingly, the interviews focused heavily on the following components:

- State of current rail operations and usage;
- Description of current system conditions, issues and barriers to increased use; and
- Outlook for increased use of freight rail based on forecasted business conditions.

The following are the freight stakeholders interviewed:

Rail Shippers/Receivers:

- Ciment Quebec
- Eastern Propane
- Hampshire Paper
- 3M Innovative Paper Technologies
- Law Warehouses, Inc.
- Rymes Propane and Oil
- Public Service New Hampshire (PSNH)
- Anheuser-Busch
- Pease Development Authority, Division of Ports and Harbors

Rail Carriers:

- Claremont Concord Railroad (CCRR)
- New England Central Railroad (NECR)
- New Hampshire Central Railroad (NHCR)
- New Hampshire Northcoast Corporation (NHN)
- New England Southern (NEGS)
- Pan Am Railways (PAR)
- St. Lawrence and Atlantic Railroad (SLR)

Freight rail issues, constraints and opportunities highlighted during the interviews are presented in the Rail Opportunities section of the Rail Plan.

Economic Development Interviews

Economic development organizations and professionals across the state were interviewed to gain a better understanding of the impact that rail transportation in New Hampshire has on the local and regional economies and on their economic development efforts. The organizations contacted included:

- Anagnost Realty & Development
- Grafton County Economic Development Commission
- Lakes Region Planning Commission
- Manchester Chamber of Commerce
- Manchester Economic Development Organization
- Nashua Chamber of Commerce



- Nashua Regional Planning Commission
- City of Nashua, Economic and Community Development
- Department of Resources and Economic Development (DRED)
- North Country Council
- Pease Development Authority
- Rockingham Planning Commission
- Southeast Economic Development Corporation
- Southwest Regional Planning Commission

Information collected from the interviews with these economic development professionals is provided in the Rail Opportunities section of the Rail Plan.

Transportation System Management Interviews

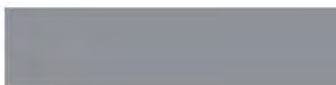
In addition, interviews were conducted with managers of modes providing important connections with the state rail system to better understand how passenger or freight rail connections could be improved. The organizations contacted included:

- Manchester-Boston Regional Airport
- New Hampshire Port Authority

The input from stakeholders and the public is an important component in development of the Rail Plan. The issues discussed and information compiled through this process have been incorporated in the Rail Plan through the development of goals, identification of potential projects, evaluation of investment strategies, and consideration of the overall vision for rail in the State of New Hampshire. Specific suggestions and input provided from the stakeholder interviews is summarized and identified in Chapter 5.



New Hampshire State Rail Plan





2. RAIL SYSTEM INFRASTRUCTURE AND SERVICE

Developing a clear understanding of the current conditions and utilization of the New Hampshire rail system is important to understand trends and opportunities in establishing investment and policy strategies. The following chapter sets out to provide a background understanding of what the New Hampshire rail system includes and how it is being utilized. This includes a brief history of the rail system and actions that have shaped its current condition. It is followed by a description of the other transportation modes in New Hampshire and the role of rail in providing transportation services in the state.

A summary of the rail line owners and freight operators is followed by more detail on the condition and usage of each freight rail line, abandoned rail lines, and passenger rail services. Information is provided regarding plans and projects undertaken throughout New England that may impact the operation of the New Hampshire rail system. The description of the system is concluded by providing information regarding how the New Hampshire transportation system is managed and aspects of the system related to safety and security.

2.1 New Hampshire Rail System History

Railroad service began in the State of New Hampshire on October 8, 1838 along the Nashua and Lowell Railroad. Near the end of the 1800s, the rail system evolved from a network of lines owned and operated by many entities to one owned by just a few major railroads. Most (90 percent) of the rail network in New Hampshire was controlled by the Boston & Maine (B&M) Railroad, with the remainder controlled primarily by the Grand Trunk Eastern.

Between 1838 and World War I the mileage of railroad in operation blossomed in support of the industrial development occurring throughout the state. The overall rail industry declined from the end of World War I to the 1980's, due to economic changes, increasing use of automobiles and trucks, and changes to the way businesses store and transport products. This decline had a large impact on the function and shape of the railroad network both across the nation and New Hampshire. Former main lines through New Hampshire like the Northern Line of the Boston and Maine Railroad have been inactive with the track removed, or downgraded to branch line status to match the level of rail traffic.

The decline of the railroad industry started to reverse near the end of the last century and the railroad industry is now considered to be a vibrant part of the nation's economy. As evidence of an improving rail industry, ton-miles of freight carried by rail are projected to rise by between 25 percent and 52 percent from 2010 to 2035.¹²

The improvements in the rail industry began with the passage of the Regional Rail Reorganization Act of 1973, the Staggers Rail Act of 1980 and the Northeast Rail Service Act of 1981. These acts reduced the role of the Interstate Commerce Commission in regulating railroad rates and competition and allowed the railroads to discontinue operating routes that were unprofitable. With the lifting of business constraints, many railroads found it beneficial to merge.

Since 1980, the number of Class I Railroads has been reduced from 40 to just seven¹³ today. During the same period, the number of short lines increased from 250 to approximately 550, and track miles

¹² Department of Energy, Energy Information Administration, Annual Energy Outlook 2012 (Early Release), Table 7, available at www.eia.doe.gov/oiaf/aeo/index.html

¹³ Burlington-Northern/Santa Fe (BNSF), Union Pacific Railroad (UP), CSX Transportation, Norfolk Southern (NS) Combined Railroad Subsidiaries, Kansas City Southern Railway(KCS), Grand Trunk Corporation (CN), and Soo Line Corporation (CP).



operated by short lines grew from 8,800 in 1980¹⁴ to 46,474¹⁵ today. As a result, railroads have consolidated their main line operations on fewer through routes and have invested considerable capital in the resulting network, improving service and reducing costs. The US rail system is significantly more efficient than it was in 1980, despite total track mileage decreasing, the rail system volume increased from 932 billion ton-miles to 1,691 billion ton-miles.

To a significant extent, changes impacting the entire US rail system have been more dramatic in New Hampshire. The decline of the forest products industry and the related pulp and paper industry has led to less demand for rail service on some lines. In 1999, forestry and paper related commodities moved by rail in New Hampshire equaled more than 3.2 million tons. Ten years later, in 2009, the tonnage moved by rail in New Hampshire of those same classes of commodities dropped to less than 1.4 million tons. This 60 percent reduction has significantly impacted some New Hampshire railroads.

New Hampshire rail carriers have responded to the lower demand by reducing the frequency and consistency of service. While most short line and regional railroads, like those that serve New Hampshire, have low operating costs, they still must have sufficient volume to sustain their operations. Many New Hampshire companies remain dependent upon freight rail service and are anxious about further erosion of the network and service, if rail lines in the state fall below this threshold.

In 2012, the New Hampshire rail system consists of 443 miles, a third of its size when the 20th century began. However, the number of rail miles in the system has remained virtually unchanged since 2001, largely due to the state's ownership of 190 miles. In addition, the State has also purchased 300 miles of abandoned railroad corridors to preserve them for future transportation use.

2.2 New Hampshire Transportation System

New Hampshire's transportation system is comprised of various components and interrelated modes of transportation. The system works most effectively when each mode is operated to maximize its particular strength and the system is planned and managed so that each mode enhances the others in the system. The following section describes how the rail system in New Hampshire works together with the other modes in the state and the rail system in other states to enhance the overall transportation network.

New Hampshire's multi-modal transportation system is made up of infrastructure facilities and services including¹⁶:

- Highway Network
- Bicycle and Pedestrian Facilities
- Intelligent Transportation Systems
- Bus and Rail Passenger Transit
- Rail Freight
- Intermodal Centers / Park and Ride Facilities
- Aviation

The entire multi-modal transportation system plays an important part in the daily lives of each citizen, employee and business in the State. For example, a fully functioning multi-modal system is important so

¹⁴ "First Mile-Last Mile": The Short Lines, Keith T. Borman, Vice President and General Counsel for the American Short Line and Regional Railroad Association.

¹⁵ American Short Line and Regional Railroad Association, "Short line and Regional Railroad Facts and Figures", 2009, web, 1/13/2012.

¹⁶ System descriptions and issues developed from NH Long Range Transportation Plan 2010-2030. NHDOT, July 2010.



that people can get to work, bicyclists can ride safely, businesses can receive goods on time, and manufacturers can keep costs low. Each mode in the state's transportation system provides important benefits to the people and business of the state.

The following section highlights the extent of each mode in the state's transportation network along with some issues identified in the New Hampshire Long Range Transportation Plan that are related to the rail system.

Highway Network

Description:

The highway network is the primary means of mobility across the state.

- The state's public road system includes over 16,000 miles of roadway, approximately 25 percent of which are maintained by the State.
- The New Hampshire Turnpike System includes 89 miles of limited access highway, on which motorists are charged a toll.
- The Statewide National Highway System includes 790 miles of the federal designated National Highway System (NHS). The NHS is critical for public safety, emergency preparedness and connectivity with the state and to locations in other states.
- 3,789 bridges exist across the state. Over 55 percent of the bridges are maintained by the State.

Bicycle and Pedestrian Facilities

Description:

- The Regional Bicycle route network is designated along 4,031 miles of roadway.
- The State owns 315 miles of abandoned/inactive rail corridors, some of which are used as bicycle/pedestrian facilities.

Rail Related Issues:

- Coordinated management and policies for abandoned/inactive rail corridors should continue in order to maintain future potential for rail service restoration.

Intelligent Transportation Systems

Description:

- Intelligent Transportation Systems (ITS) is the application of technology such as traffic signal coordination systems, traveler information systems and automatic vehicle locator systems to the transportation system.
- Transportation Systems Management (TSM) involves the use of computer systems to manage components of the transportation systems. Management activities range from signal control to data capture and conditions reporting.

Rail Related Issues:

- Advancements in ITS and TSM improve railroad safety and security as well as enhance passenger rail services through improved passenger information.



Bus transit

Description:

- New Hampshire is served by several private intercity bus operators, which carry over 875,000 riders per year (2009).
- Fixed route transit service is operated in 11 areas of the state, providing over 3.5 million person-trips per year (2009).

Rail Related Issues:

- The state budget does not include operating funds for transit (bus or rail).
- Current low density development patterns make effective mass transit (bus or rail) more difficult.

Intermodal Centers and Park and Ride Facilities

Description:

- There are 28 Intermodal Centers/Park and Ride facilities throughout New Hampshire that are owned by the State. These serve as centralized meeting places where commuters park vehicles and then participate in carpools, vanpools, or transit services.

Rail Related Issues:

- The success of park and ride lots and associated transit/ridesharing indicates a demand for alternative transportation, possibly passenger rail service.

Aviation

Description:

- The system of airports in New Hampshire is comprised of 25 public use airports that are both publicly and privately owned. Three of the airports have scheduled airline service (Manchester, Pease International Tradeport, and Lebanon), and two of those airports (Manchester and Pease International Tradeport) have air cargo services.
- Over 1,240 aircraft are based at New Hampshire airports around the state.
- Estimated annual aircraft operations (takeoffs & landings) numbering over 700,000 in New Hampshire.

Rail Related Issues:

- Business and economic development potential for the existing facilities remains high, this includes the potential for additional freight and passenger movements, possibly in coordination with rail services.

A functional multi-modal transportation system has been identified through the long-range transportation planning process as fundamental to New Hampshire's sustainable economic development and land use, enhancing the environment, and preserving the unique character and quality of life.



2.2.1 Role of National and New Hampshire Rail System

The North American railroad industry has successfully positioned itself as a key link in a global supply chain through more efficient integration of its operations with other carriers and modes. The freight rail industry is important in that it transports bulk raw materials for energy production and industry in general. In addition, the rail system is the preferred mode for moving many consumer goods over long distances.

The majority of freight rail activities involve train moves over hundreds of miles, often crossing multiple states. The rail system in the United States is fully integrated across North America from Mexico to Canada, connecting shippers with both national and global markets. It is unique in the industrialized world as primarily a private sector industry with individual railroads owning the infrastructure and providing the service to customers.

Even though the national rail system is comprised of over 500 different railroads, it still operates as an integrated system with most long distance shipments moving on more than one railroad. Rail shipments made to and from New Hampshire also generally are made on more than one railroad. Through the regional and short line carriers serving the state, local industries have access to virtually every rail served shipper/receiver in North America through Class I carriers. Figure 2-1 provides an overview of the major rail gateways that connect New Hampshire to the North American rail network.

Pan Am Railways has direct Class I connections with Norfolk Southern (NS) through its Patriot Corridor partnership¹⁷ and with CSX at Worcester, MA. In the North Country, the St. Lawrence and Atlantic has a direct connection to the Canadian National Railway (CN) at St. Rosalie, QC. Along the Connecticut River, The New England Central Railroad has direct connections with the CN, CSX and NS via the Pan Am Southern. Additionally, the Canadian Pacific Rail System (CP) can be accessed by Pan Am Southern and by the New England Central Railroad via the Vermont Rail System.

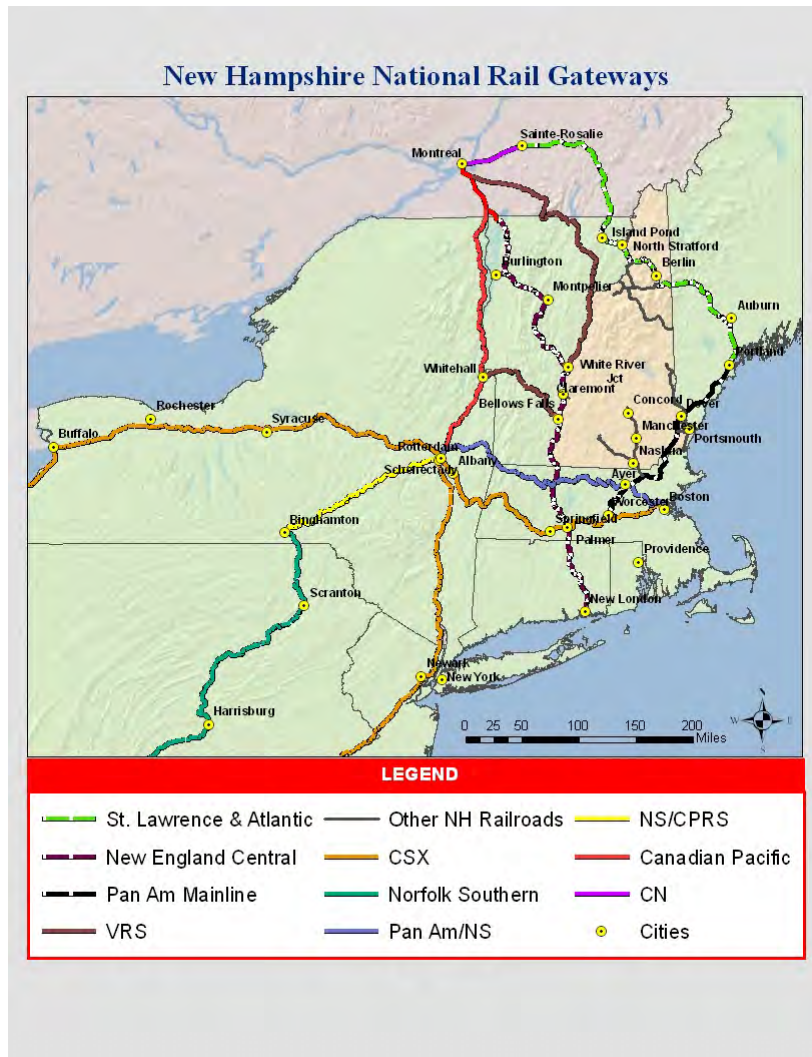
The North American rail system is better positioned to compete with other modes than at any time in recent history. The Class I railroads are profitable, and have been able to attract the investment capital needed to reinvest in their networks and to expand capacity for growth. With a stable regulatory framework and considerable market power, major companies can be expected to be profitable and the rail network maintained in top condition over the long term. Economic trends such as increasing fuel prices, truck driver shortages and highway congestion all improve the competitive nature of rail as a transportation mode.

Part of the drive for increased competitiveness is in the establishment of new North American standards for railcar capacity and the carrying capacity of the rights of way. Traditionally, most rail cars and rights of way have had a maximum gross weight capacity of 263,000 pounds. The unofficial standard, rapidly being adopted nationally, is 286,000 pounds, which has been supported by the purchase of new rail cars by shippers and by carriers seeking to maximize their productivity. In New Hampshire most of the rail lines remain capable of only carrying a maximum gross weight of 263,000 pounds. Therefore, many rail cars destined to New Hampshire can not be filled to capacity, thereby increasing New Hampshire shipping costs for some products. Additional information regarding rail car weight standards is included in Section 5.12, Freight Rail Trends.

¹⁷ See section 2.7.3 – Massachusetts Projects for further detail on the Patriot Corridor.



Figure 2-1: National Gateways for the New Hampshire Railroad System



Source: NHDOT and HDR Engineering¹⁸

Similarly, the industry is engaged in increasing the vertical clearances of key lines to accommodate the transport of double stack intermodal containers. Intermodal containers enable cargo to be transferred easily from one mode to another. With these containers stacked two high on a train, the capacity of the train is doubled without substantially increasing the transportation costs. The move to double stack container trains has assisted the railroads in keeping transportation costs down. However, changing the national network to the double stack clearance of 20'-8" to accommodate the tallest double stack container is a significant undertaking. In general, New Hampshire and New England railroads have lagged behind in making the bridge clearance improvements necessary to reap the efficiency benefits of double stack containers. Presently only the St. Lawrence & Atlantic Railroad can operate full height double stack trains through New Hampshire. Additional information regarding rail double stack clearances in New Hampshire is included in Section 5.13, Network Maintenance Initiatives.

¹⁸ The source for all graphics and tables included in the Rail Plan is NHDOT or their consultant HDR Engineering, if not otherwise noted.



New Hampshire along with the rest of New England is often referred to as a cul-de-sac in the national rail network, since the area is primarily a freight destination and there are no major rail routes that travel directly through the region. Due to the geography of the Class I network, the rail volumes in New Hampshire and New England tend to be considerably lower than most other states in the nation. However, this limited volume does not equate to a limit in importance as part of the transportation network.

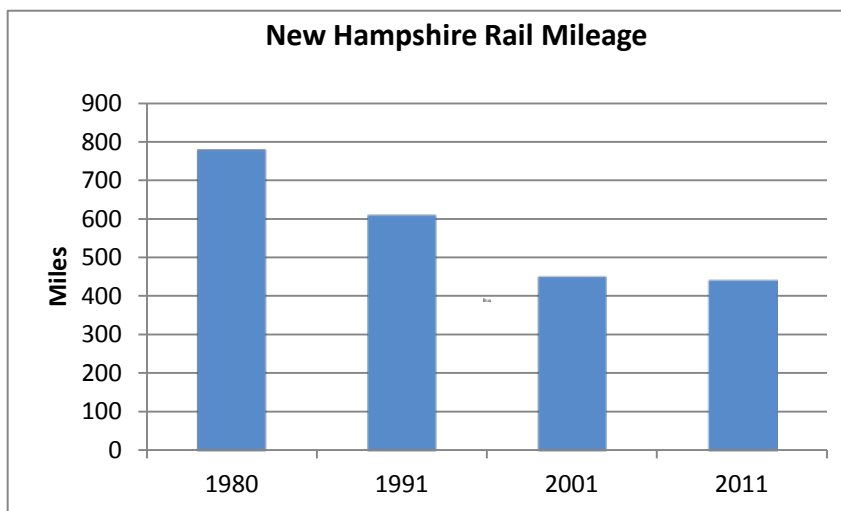
2.3 State Rail Network

The rail system in New Hampshire is composed of 443 route miles of active rail lines¹⁹. The New Hampshire rail network handles more than 4.72 million tons of cargo each year in approximately 58,000 carloads. This includes 67,000 tons of product that is shipped out of the state, 982,000 tons of material shipped into the state and 3.67 million tons that simply travel through New Hampshire, called “overhead traffic”. In addition to the freight rail, over 500,000 passengers annually travel through the state on the Amtrak Downeaster and Vermonter services, with over 200,000 of these passengers starting or ending their trips in New Hampshire. Additionally tourist rail services in the state attract over 170,000 riders per year.

2.3.1 New Hampshire Railroad Mileage

Since 2001, fewer than three miles of track have been officially abandoned, which is a slowdown in changes that occurred in previous decades. The abandoned sections include 1 mile of track in Salem on the former Manchester & Lawrence Line, one mile of track in Concord on the former Concord-Clairemont Railroad, and 0.18 miles of track on the former Lakeport Spur, in Laconia. In addition to the officially abandoned lines there are other rail lines in the state that no longer have regular rail service and may be considered for abandonment. Section 2.5.2 provides additional discussion related to abandoned lines.

Figure 2-2: Miles of Active Rail in New Hampshire



¹⁹ The American Association of Railroads develops state rail mileage totals which are widely used; however the AAR calculations include trackage rights in their mileage totals. Trackage rights are where two freight railroads have the rights to operate over one section of track, this essentially double counts some track segments. If trackage rights were included, the New Hampshire total would be 470 miles.



New Hampshire ranks 46th nationally in terms of mileage in the state’s rail network (see Table 2-1). This is understandable due to the size of the state, both in terms of population and land area. However, when New England is examined as a single entity and compared to other states, the size of the rail network is substantial. Furthermore, the efficiency of the 443 miles of rail line in New Hampshire is average when compared to the other New England states, carrying about 126 carloads per mile.

Table 2-1: State Rail Networks in New England

State	Rail Miles	National Rank	Land area (sq. mi.)	2009 Population (Mil.)	Annual Tons (Mil.)	Annual Carloads	Carloads per mile
NH	443	46	8,968	1.32	4.72	58,000	126
ME	1151	40	30,865	1.32	4.39	56,600	49
MA	952	42	7,840	6.59	13.05	344,400	302
VT	590	44	9,250	0.62	6.11	113,100	177
CT	327	47	4,845	3.52	2.67	29,700	42
RI	85	49	1,045	1.05	0.72	9,900	116
New England	3,520	"12"	62,813	14.42	31.66	611,700	146

The largest railroad in New Hampshire in terms of active rail line in the state is Pan Am Railways with 121 miles of active track. St. Lawrence & Atlantic is the next largest railroad, in terms of railroad miles operated, followed by the tourist railroads, Plymouth and Lincoln, and Conway Scenic. A summary of the track mileage and operator type is presented in Table 2-2 and a complete discussion of each freight railroad operators follows the table. A description of passenger rail and excursion operations is included in Section 2.6.



Table 2-2: Miles of Rail Operated in New Hampshire

	Miles of Railroad Principally Operated	Percent of New Hampshire Rail System
Class 1	none	
Regional Railroads		
Pan Am Railways (PAR)	121	27.1%
New England Central (NECR)	24	5.4%
Local Railroads (Freight)		
Claremont Concord (CCRR)	5	1.1%
Green Mountain (GMRY)	1	0.2%
Milford-Bennington (MBRR)	18	4.0%
New England Southern (NESR)	18	4.0%
New Hampshire Central (NHCR)	44	9.9%
New Hampshire Northcoast (NHN)	42	9.4%
St. Lawrence & Atlantic (SLR)	58	13.0%
Twin State (TSRR)	6	1.3%
Tourist Railroads		
Conway Scenic (CSRR)	51	11.4%
Plymouth & Lincoln (PLRR)	55	12.3%
Total	443	

Notes: In recent years, Milford-Bennington RR utilized 4 of the 18 miles on which it may operate. Twin State RR has a lease on the same rail line as the New Hampshire Central.



2.4 Rail Owners and Freight Operators

The New Hampshire rail system is comprised of five primary owners of the railroad lines:

- New England Central Railroad,
- New Hampshire Northcoast Corporation,
- Pan Am Railways,
- St. Lawrence & Atlantic Railroad and
- State of New Hampshire.

In addition to these five primary owners, four of which are also railroad operators, there are six additional freight railroads that either operate on small segments of track in New Hampshire or over track owned by others, such as state-owned lines. These include:

- Claremont Concord Railroad,
- Green Mountain Railroad,
- Milford-Bennington Railroad,
- New Hampshire Central Railroad,
- New England Southern, and
- Twin State Railroad.

The following sections provide a description of the freight railroad line owners/operators in the State of New Hampshire. Descriptions of passenger rail owners/operators are provided in Section 2.6.

State of New Hampshire

The rail network in the northeast is unique due primarily to the density of lines that were built and the value placed upon those lines by the communities they serve. There is a high level of public ownership of rail lines throughout the northeast, including New Hampshire. Railroads were entirely owned by the private sector until the early 1970s, which is when northeast states began acquiring railroads. Legislation and funding programs, on both the federal and state levels, expanded public ownership of rail lines in response to a national rail crisis in which many railroads were going bankrupt.

The state owns 201 miles of active rail corridor. New Hampshire Central Railroad operates on 44 miles of state-owned tracks in the North Country, New England Southern operates on 18 miles of state-owned track in central New Hampshire, and Claremont Concord Railroad operates on 2 miles of state-owned track in Lebanon.

In addition to the active rail lines, the state owns approximately 300 miles of abandoned railroad corridors, which were purchased in order to preserve them for future rail and other transportation use. Most of these are used as recreational trails under the management of the New Hampshire Department of Resources and Economic Development (DRED). Additional information related to these corridors is presented in Section 2.5.3. Provisions to allow for restoration of a line to active rail service are included in trail agreements on most state-owned abandoned rail lines.

Pan Am Railways (PAR)

PAR is a privately held Class II (Regional) rail carrier with operations in five New England states and New York. Its operational headquarters are located in North Billerica, MA. Pan Am Railways is owned by Pan Am Systems. PAR's rail ownership and operations are carried out by its subsidiaries, the Boston and Maine Corporation (B&M), which is the property owner, and Springfield





Terminal (ST), which operates the railroad. PAR operates or owns the following lines in New Hampshire:

- Hillsboro Running Track
- Main Line East (abandonment pending)
- Main Line West
- New Hampshire Main Line
- Newington Branch
- Northern Line (Concord)
- Portsmouth Branch

New England Central Railroad (NECR)

NECR is a subsidiary of Rail America, Inc., with headquarters in Jacksonville, FL which in turn is principally owned by the Fortress Investment Group of New York. Rail America owns 43 railroads operating approximately 7,400 miles in the United States and Canada. NECR headquarters are located in St. Albans, VT. The New England Central operates along their line which runs 366 miles between New London, CT and Alburgh, VT. The line enters New Hampshire for 24 miles between North Walpole and Cornish.



St. Lawrence & Atlantic Railroad (SLR)

St. Lawrence & Atlantic is a wholly-owned subsidiary of Genesee & Wyoming, Inc., a publicly-traded short line railroad holding company, headquartered in Greenwich, CT. SLR's corporate office is located in Auburn, ME. The SLR main line runs from Danville Junction, ME through New Hampshire and Vermont before connecting to its Canadian affiliate, the St. Lawrence & Atlantic Railroad (Quebec) Inc., (SLQ), in Norton, VT. In addition to the main line, SLR is the operator for the Berlin Mills Branch although with the closing of the mill in 2006 there has been no use of this line.



New Hampshire Northcoast Corporation (NHN)

New Hampshire Northcoast (NHN) is owned by Boston Sand and Gravel Co. and was established in 1986 with the purchase of 42 miles of track between Ossipee and Rollinsford, known as the Conway Branch. This track was rebuilt with the primary purpose of providing transportation for sand and other aggregate products from Ossipee to Rochester, NH and Boston, MA.



New Hampshire Central Railroad (NHCR)

The NHCR is a New Hampshire company based in North Stratford that operates 44 miles of rail in the North Country, along with a transload, bulk fuel distribution center and repair facility in North Stratford. This includes the former Boston and Maine Railroad line between Groveton and Littleton and operating rights on the former Maine Central Railroad Mountain Division between Whitefield and Gilman, VT.





New England Southern Railroad (NEGS)

The NEGS is a New Hampshire company that operates exclusively on 18 miles of the state-owned Concord to Lincoln line. The railroad's agreement includes the right to operate freight service to Lincoln. In addition the railroad has constructed an industrial site with transload capacity at Canterbury, NH.



Milford-Bennington (MBRX)

Prior to 2011, the Milford-Bennington Railroad (MBRX) operated along 18 miles of state-owned track between a sand and gravel quarry in Bennington and a stone processing plant in Milford under a contract with the State of New Hampshire. In 2011 the state's operating contract was terminated. As of March 2012, the State of New Hampshire has issued a solicitation to conduct freight rail operations along the state-owned line. During this period MBRX has continued operations under federal operating authority.

Milford-Bennington Railroad

Claremont Concord Railroad (CCRR)

The Claremont Concord Railroad, with offices in Pennsylvania and Claremont, NH, operates five miles of track that branch from the Connecticut River line in Western New Hampshire, these include two miles of track in Claremont, and three miles of track in West Lebanon.



Green Mountain Railroad (GMRC)

The Green Mountain Railroad is part of the Vermont Railway System and operates one mile of track in New Hampshire that serves as access between its line and a shop and rail yard in North Walpole.



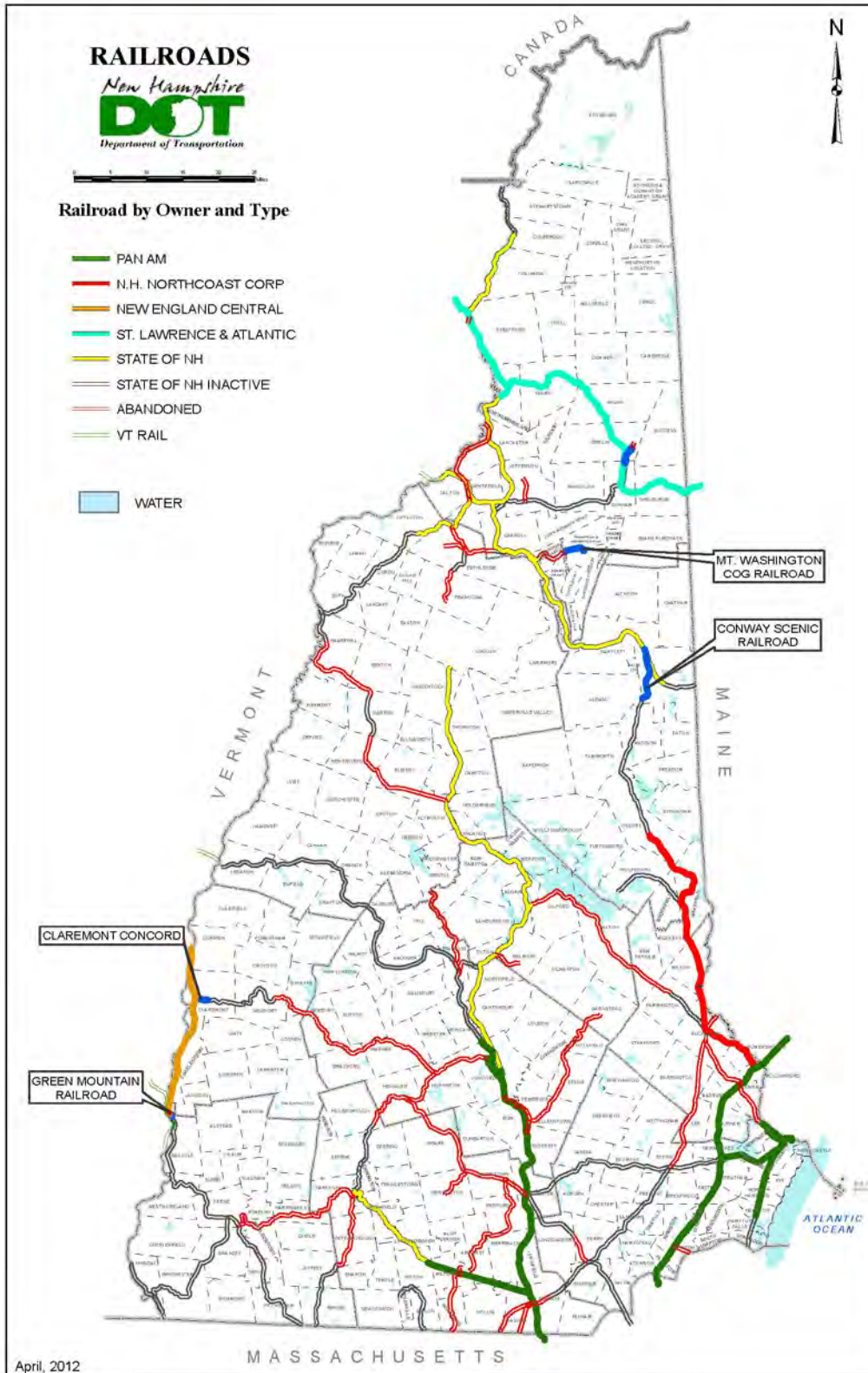
Twin State Railroad (TSRD)

The Twin State Railroad, a subsidiary of CSF Acquisitions, asserts a non-exclusive lease for railroad operating rights over the portion of the Mountain Division Line between Whitefield and St. Johnsbury, VT. The railroad has not provided service along the line since October 1999.

The locations of the lines owned/operated by the railroads are shown in Figure 2-3: New Hampshire Railroads



Figure 2-3: New Hampshire Railroads





2.5 Freight Rail System

The New Hampshire rail lines can be consolidated into four regions for the purposes of understanding how the system works, traffic flows, condition, potential for growth, interface with passenger operations and as potential candidates for infrastructure investment. The four regions are:

- North Country
- Connecticut River Valley
- Southern New Hampshire
- Seacoast

Following is a description of the active rail lines in each region, including maps of the rail lines comprising each region and details about the region's infrastructure, ownership and operations.

2.5.1 Active Freight Lines

North Country

As shown in Figure 2-4, there are a number of North Country locations that are currently active with direct rail service, and transloading capabilities. The St. Lawrence and Atlantic line serves as the backbone in this region, providing interstate and local service and connecting with other short lines and regional railroads.

The commodities originating in the North Country and shipped out of state include pulp, paper and allied products, and petroleum-based products. This freight is transported internationally to Canada, as well as to the Midwest and southern New England. These same commodities are also shipped into New Hampshire from Canada and southern U.S. states.

The specific rail lines that in the North Country include:

- St. Lawrence & Atlantic Line
- Berlin Mills Branch
- Berlin Branch
- Groveton Branch
- North Stratford-Beecher Falls Line
- Mountain Division (Twin State)
- Mountain Division (Conway Scenic)
- Conway Branch (Conway Scenic)



Figure 2-4: North Country Rail Lines





St. Lawrence and Atlantic Line

The entire Saint Lawrence & Atlantic Line extends 157 miles from Portland, ME to the Vermont-Quebec border. SLR crosses the Canadian border at Norton, VT connecting with its sister railroad, the Saint Lawrence & Atlantic Railroad (Quebec) (SLQ). SLQ interchanges with Canadian National at Ste. Rosalie, QC. SLR interchanges with New Hampshire Central Railroad in North Stratford, NH and Pan Am Railways at Danville Junction, ME. SLR is a key connection for Northern New England.

The line in New Hampshire is approximately 52 miles long and is mostly Federal Railroad Administration (FRA) Class 3²⁰ with a maximum freight speed of 40 mph due to the topography of the line. Approximately 16 miles of this line in New Hampshire is rated at 263,000 pounds maximum gross weight. The balance of the line is rated at 286,000 pounds. This is the only main line in Northern New England capable of full double stack service over its entire length.

Commodities transported include aggregates, brick and cement, chemicals, food and feed products, forest products, intermodal, and steel and scrap.

Berlin Mills Branch

The Berlin Mills Branch is leased by the St. Lawrence and Atlantic Railroad. The entire line is approximately 6 miles long, most of which has been inoperative since the shutdown of the mill in Berlin. A switch has been removed making a portion of the line inaccessible.

Berlin Branch

The Berlin Branch is owned by the State of New Hampshire and operated by the New Hampshire Central Railroad. The active portion of the line is approximately 18 miles from Littleton to Waumbek Junction, in Jefferson, passing through Whitefield. The remainder of the Branch, east of Waumbek Junction has been abandoned. The active portion of the line is maintained to FRA Class 1 standards and operated on an as-needed basis, but with operations ceasing during the winter. The line crosses over 11 bridges and 16 grade crossings.

Groveton Branch

The Groveton Branch is owned by the State of New Hampshire and operated by the New Hampshire Central Railroad except for one mile of the line in Groveton owned and operated by SLR. New Hampshire Central and SLR interchange at Groveton. The FRA Class 1 line stretches 19 miles between Jefferson and Groveton. Along the 18 mile NHCR portion, there are 22 at-grade crossings and six bridges. There is presently one customer along the line that receives plastic pellets and a new track that serves as a transload facility located in Hazens (Whitefield).

North Stratford-Beecher Falls Line

The North Stratford-Beecher Falls Line is owned by the State of New Hampshire and operated by the New Hampshire Central Railroad. Presently the southern two miles of the line are used on a weekly basis to provide access to a fuel transload facility and NHCR railroad rolling stock repair facility. NHCR's primary business at this facility is the repair and maintenance of a portion of the St. Lawrence and Atlantic fleet. The next 6 miles of track remain active although they are used much less frequently as this segment is frequently used for rail car storage. NHCR and SLR have an interchange at North Stratford. The line is not active north of Colebrook and has been turned over to the New Hampshire Department of Resources and Economic Development for recreational use and management. The 8 miles of actively used line includes 2 at-grade crossings and no bridges.

²⁰ See Appendix A for additional information regarding FRA Track Class Standards



Mountain Division (Twin State)

The eight-mile segment of the Mountain Division that lies between Whitefield and Gilman, VT was purchased by the State of New Hampshire. Six miles of the rail line are located in New Hampshire. The state has entered into an agreement with New Hampshire Central to operate the line. An operating lease with Twin State Railroad (was assigned to the State of New Hampshire upon sale of the line by the Maine Central Railroad). There is not any rail traffic along the corridor currently.

Mountain Division (Conway Scenic)

The Mountain Division line runs between the New Hampshire/Maine border in Conway and Whitefield, a total of 51 miles. This line is owned by the State of New Hampshire and is leased to the Conway Scenic Railroad. This tourist excursion railroad operates and maintains the line west of Redstone (a village within Conway). This line is maintained to FRA Class 1 and 2 standards.

Conway Branch (Conway Scenic)

The Conway Scenic owns and operates a 7-mile segment of the Conway Branch for operation of excursion trips. This track is maintained to FRA class 2 standards and includes 17 at-grade crossings and seven bridges.

Connecticut River Valley

The Connecticut River Valley is well served by rail service with a number of New Hampshire locations directly served, including West Lebanon, Claremont, and Claremont Junction. See Figure 2-5. Additionally, transload rail to truck service of rock salt from Vermont is provided to North Walpole, NH. The New England Central Railroad's line is the main feeder line with joint customer access to the Claremont-Concord by both Pan Am and NECR. The Vermont Rail System also connects at Bellows Falls and White River Junction.

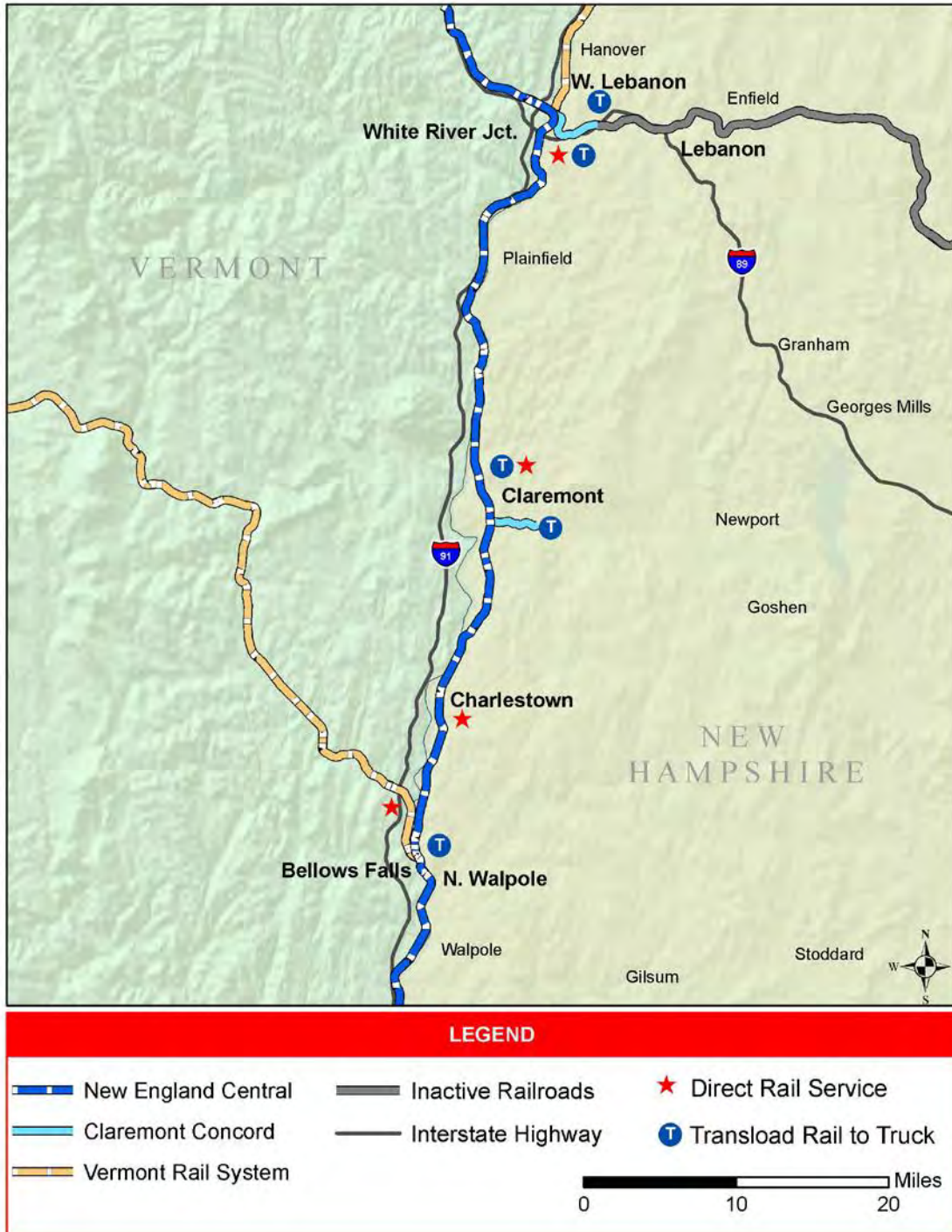
The commodities terminating in this region are primarily lumber or wood products and petroleum products, along with some rock salt. Rail shipments originating from the area are generally limited to scrap metal.

The rail lines that make up the area include:

- Connecticut River Line
- Cheshire Branch
- Concord to Claremont Line
- Northern Line



Figure 2-5: Connecticut River Valley Rail Lines





Connecticut River Line

The Connecticut River Line is owned and operated by the New England Central Railroad (NECR) which runs 394 miles between the VT/Canada border and New London, CT. A 24 mile segment of the line is in New Hampshire between Walpole and Cornish. In addition to freight service, Amtrak's Vermonter operates on the line providing daily service between St. Albans, VT and New York City. Pan Am Southern maintains freight operating rights over the line.

The line is maintained to FRA Class 3 standards, allowing freight speed up to 40 mph. The New Hampshire segment of the line includes 23 at-grade crossings and 11 bridges. This line is currently undergoing improvements so the line can be operated at FRA Class 4 standards, thereby enabling the Amtrak Vermonter to operate at speeds up to 79 mph in some segments. The improvements will also allow passage of rail cars with weights of up to 286,000 pounds. These improvements are being funded through a federal grant to the Vermont Agency of Transportation.

Another project pending along the New Hampshire segment is the realignment of the track that is necessary due to improvements to Route 12 between Walpole and Charlestown, which requires the relocation of approximately 2.5 miles of the line.

NECR provides intermodal service on the line. It is capable of accommodating double stacked containers in a mixed (import and domestic) configuration, which requires lower vertical clearances than full double stack (two domestic containers). (See Section 5.1.2, Freight Rail Trends for additional discussion of double stack intermodal clearances). NECR provides intermodal service to interchange with P&W at Willimantic, CT. The intermodal traffic originates and terminates at the P&W terminal in Worcester, MA. NECR also provides on-dock maritime access at the Port of New London, CT.

Major commodities moving on the NECR include lumber, panels & plywood, poles, newsprint, printing paper, compressed gas, chemicals, fuel oils, road salt, ferrous and non-ferrous metals, fabricated metals, resins, intermodal containers, finished vehicles, feed mill ingredients, machinery & equipment, recyclables, ash, construction debris, foodstuffs and non-metallic minerals.

Cheshire Branch

A one mile segment of the Cheshire Branch is owned and operated by the Green Mountain Railroad, which is part of the Vermont Railway System. The branch provides a connection between the Green Mountain Railroad Line in Bellows Falls, Vermont and a car repair facility, engine house and rail yard in North Walpole. This line includes one at-grade crossing and the bridge over the Connecticut River.

Concord to Claremont Line

A two mile section of the Concord to Claremont line remains active between the NECR/PAS interchange and downtown Claremont. This line is owned and operated by the Claremont Concord Railroad and is maintained and operated at FRA Class 1 standards. There are no bridges on the line and only two at-grade crossings. The railroad operates a railcar and locomotive repair shop and generally runs service on the line multiple times per week carrying salt, lumber and some recycled steel to/from transload facilities.

Northern Line

A two mile section of the Northern Line is active in West Lebanon. The line is owned by the State of New Hampshire and operated by the Claremont Concord Railroad. The line is maintained and operated at FRA Class 1 standards. There are four bridges and three at-grade crossings along the active segment of the line. The railroad generally runs service on the line multiple times per week carrying salt, cement and propane.



Southern New Hampshire

Rail lines in southern New Hampshire include three lines that provide connections along the Merrimack River, including the New Hampshire Main Line that connects Nashua, Manchester and Concord. The locations of the rail lines in southern New Hampshire are shown in Figure 2-6.

This region currently receives three quarters of all freight shipped into New Hampshire by rail, based on weight. While the freight received is quite diverse, traffic is dominated by coal for electric generation at Bow. Clay, concrete, glass, and stone also comprise much of the freight moving into this area, based on weight. Other products shipped to this area include farm products, lumber and wood products, food, chemical products, and some nonmetallic minerals. Significantly more freight rail traffic is shipped into this area than is shipped out. The small amount of outbound freight rail traffic is categorized by shippers as miscellaneous freight.

The lines in this region have significant potential for shared passenger and freight use. Two potential passenger rail services are expansion of Massachusetts Bay Transportation Authority (MBTA) commuter rail service from the south or intercity passenger rail service as part of the New Hampshire Capitol Corridor. This corridor is within the Federal Railroad Administration's designated Boston-Montreal high speed rail (HSR) corridor. Infrastructure improvements in the corridor would benefit both passenger and freight interests.

Additionally, the region includes short line operations on the lighter density portions of the Hillsboro Branch and north of Concord. This region provides many of the network attributes that can be supportive of economic growth through increased use of rail, including: existing rail capacity, population density, highway access and real estate for business expansion.

The rail lines that make up the area include:

- New Hampshire Main Line
- Concord to Lincoln Line
- Hillsboro Branch

New Hampshire Main Line

The New Hampshire Main Line runs for 39 miles in New Hampshire through Nashua, Manchester and Concord. The line is owned and operated by Pan Am Railways. The line is maintained to FRA Class 3 from Nashua to Manchester, Class 2 between Manchester and Bow, and Class 1 between Bow and Concord. There are 11 bridges and 23 grade crossings along the line. Pan Am Railways operates from the Massachusetts state line to Bow, delivering unit coal trains and local freight to Nashua, Merrimack, Manchester, and Concord.

Concord-Lincoln Line

The Concord-Lincoln Line, which runs the 73 miles between Concord and Lincoln, is owned by the State of New Hampshire. Two tourist services and one freight railroad operate over this line. The tourist services, both operated by Plymouth & Lincoln Railroad, are the Hobo Railroad operating out of Lincoln and the Winnepesaukee Scenic Railroad operating out of Meredith. Freight service is operated along the line to Tilton by the New England Southern Railroad. The line is maintained to FRA Class 1 standards with 47 bridges and 58 public grade crossings along the 73 miles.



Figure 2-6: Southern New Hampshire Rail Lines





Hillsboro Branch

The Hillsboro Branch from Nashua to Wilton, a distance of 12 miles, is owned and operated by Pan Am Railways. This section of the branch, known by PAR as the Hillsboro Running Track, passes over eight bridges and 36 grade crossings and is categorized as FRA Excepted, which means that no passenger trains are permitted to operate along the line and there are limitations on hazardous material that can be transported over the line.

The section of the Hillsboro Branch between Wilton and Bennington, a distance of 18 miles is owned by the State of New Hampshire. It is operated by the Milford-Bennington Railroad. Service is operated over two miles of the state-owned track between Wilton and South Lyndeborough. This active track is maintained to FRA Class 2 standards, passing over two at-grade crossing and five bridges, including trestles in Lyndeborough and Bennington.

Seacoast

The Seacoast region is served via the Pan Am Railways Main Line - West from the Massachusetts border to the Maine border, the route of the Amtrak Downeaster. In 2000-2001 it was upgraded significantly, providing increased speeds for both freight and passenger service. The rail network includes potential on-dock rail access at the Port of Portsmouth, access to industries along the Piscataqua River, as well as a bridge connection to Kittery, ME. Further north, a branch line extends from Dover along the New Hampshire/Maine border to Ossipee, NH. The location of the rail lines in the Seacoast area are shown in Figure 2-7. Nonmetallic minerals (sand) are shipped out of this region to other parts of New England, and the inbound freight is primarily comprised of lumber, wood products, food, scrap metal, and propane.

The rail lines that make up the area include:

- Main Line – West
- Main Line – East (Hampton Branch)
- Portsmouth Branch
- Newington Branch
- Conway Branch

Main Line – West

The Main Line West is owned and operated by Pan Am Railways. The New Hampshire section of the line is 35 miles long between Rollinsford and Plaistow. This line is of regional importance as it provides a through route between Maine and Massachusetts utilized for daily freight service and for the Amtrak Downeaster passenger service. The 2001 upgrade included improvements to all aspects of the infrastructure, including ties, ballast, rail, signals, bridges and at-grade crossings.

Main Line – East (Hampton Branch)

The Main Line East (Hampton to Portsmouth) is owned and operated by Pan Am Railways. It is 10 miles long, extending between Portsmouth and the former Foss Manufacturing plant in Hampton. There has been no traffic on the line for several years and Pan Am Railways has begun the process of abandonment. The segment of the former Main Line-East to the south between the Massachusetts border and Hampton was abandoned and purchased by the State of New Hampshire for corridor preservation.



Figure 2-7: Seacoast Rail Lines





Portsmouth Branch

The section of the Portsmouth Branch is owned and operated by Pan Am Railways. Ten miles of FRA Class 1 track is active between Portsmouth and Newfields, connecting the Main Line West with the Main Line East (Hampton Branch) and the Newington Branch. The branch passes over three bridges and 12 grade crossings.

Newington Branch

The Newington Branch is owned and operated by Pan Am Railways. It is 3.5 miles long, running between Newington and the Portsmouth Branch in Portsmouth. The line is maintained to FRA Class 1 standards and includes one bridge and 13 at-grade crossings.

Conway Branch (NH Northcoast)

The majority of the Conway Branch in operation is owned and operated by the New Hampshire Northcoast between Rollinsford and Ossipee. These 42 miles of track are maintained to FRA Class 3 standards; capable of handling 286,000 lb. carloads, and include over 45 grade crossings and 6 bridges. The northernmost section of the line, in Conway, is owned and operated by the Conway Scenic Railroad, as described in the previous North Country section.

2.5.2 Abandoned Rail Corridors

The State of New Hampshire has purchased corridors from railroads that discontinued service and abandoned the corridors. Most are owned by NHDOT and acquired principally to protect the corridor for potential future railroad service. Currently, the State of New Hampshire owns 330.9 miles of abandoned railroad corridors along 23 different former rail lines.²¹ Rail lines that have not been identified as having a possible future use for rail have been or will be transferred to DRED for recreational uses. The locations, distances and potential future uses of corridor now being used as recreational trails are included in Table 2-3.

²¹ New Hampshire State Trails Plan, May 20, 2005, New Hampshire Department of Transportation.



Table 2-3 State-owned Abandoned Rail Corridors

Railroad Name	Limits	Length (miles)	Possible Future Use
Berlin Branch, Southern Section	Haverhill to Littleton	18.9	Recreational
Berlin Branch, Northern Section	Jefferson to Gorham	18.3	Recreational
Upper Coos Railroad	Whitefield to Jefferson	1.9	Freight Rail
Upper Coos Railroad – Beecher Falls Branch	Colebrook to Beecher Falls	8.7	Recreational
Profile Railroad	Bethlehem	2.0	Recreational
Conway Branch	Ossipee to Conway	21.3	Freight Rail & Passenger /Excursion Service
Wolfeboro Railroad	Wakefield to Wolfeboro	11.4	Recreational
Northern Railroad, Eastern Section	Boscawen to Danbury	34.0	Boston-Montreal High Speed/Freight
Northern Railroad, Western Section	Danbury to Lebanon	25.0	Boston-Montreal High Speed/Freight
Sugar River Railroad	Newport to Claremont	10.5	Recreational
Manchester and Lawrence Branch	Salem to Manchester	23.0	Commuter Rail & Freight Rail
Portsmouth Branch	Newfields to Manchester	27.4	Recreational
Fremont Branch, Southern Section	Hudson to Fremont	22.1	Recreational
Fremont Branch, Northern Section	Fremont to Epping	4.5	Recreational
Hampton Branch	Seabrook to Hampton	4.2	Commuter Rail
Lakeport Branch	Rochester	1.5	Recreational
Farmington Branch	Rochester to Farmington	6.8	Recreational
Ashuelot Branch	Hinsdale to Keene	21.5	Recreational
Cheshire Branch	Fitzwilliam to Walpole	42.0	Recreational
Fort Hill Branch	Hinsdale	8.7	Recreational
Hillsborough Branch	Hillsborough to Bennington	7.8	Recreational
Monadnock Branch	Rindge to Jaffrey	7.2	Recreational
Greenville Branch	Mason to Greenville	2.2	Recreational
Total Rail Corridor Mileage		330.9	

Source: New Hampshire State Trails Plan, May 2005

Some currently inactive lines have been allowed to be used for recreational purposes. This use is allowed with the stipulation that railroad service may be restored on the corridor with appropriate notice.

Presently, many of these corridors serve as multi-use trails and provide transportation and recreation. Most of the NHDOT-owned corridors are managed by DRED for interim trail use. Some of these corridors have been improved (i.e. paved as bike paths), but most of the abandoned railroad corridor mileage is unimproved. As a result, these trails are primarily utilized by snowmobiles. Figure 2-8 is a map showing the abandoned corridors within New Hampshire.

In some cases, state-owned lines active with freight during the summer months are used as snowmobile trails in the winter months with written permission. In some areas, there is interest in developing trails on active railroad corridors. The 2005 State Trails Plan includes standards and recommendations on ensuring safe operation of trails on active rail corridors.



Recent Abandonments

The ICC Termination Act of 1995 required rail line abandonments to be approved by the Surface Transportation Board (STB). The STB has established a process to approve abandonments by determining whether the present or future public convenience and necessity require or permit the abandonment. Most abandonments in New Hampshire follow an “exempt” process for out-of-service lines in which the railroad certifies that:

- No local traffic has moved over a line for at least two years;
- Any overhead traffic on the line can be rerouted over other lines; and
- No formal complaint is filed by a user of the service on the line or by a government entity acting on behalf of a user

All abandonment procedures require that opportunity be granted for public protest or comment regarding the abandonment, and that sufficient time be allowed for offers of financial assistance to be made for the purpose of keeping the line in operation. For exempt abandonments the railroads must notify the State Department of Transportation of its intent to file at least 10 days before filing the exemption notice with the STB. In addition, the railroad must also send an advance environmental notice to the State.

Since the 2001 New Hampshire State Rail Plan, there are only three line segments that have been officially abandoned. These include the Manchester & Lawrence (M&L) Line, a portion of the former Concord to Claremont Line and a segment of the former Lakeport Line in Laconia.

- In 2001, only one mile of the M&L line was categorized as active in the state. This section of the line provided access to a manufacturer that at one time utilized rail service for plastic products. In 2003 the railroad, Pan Am Railways, concluded the rail line abandonment process.
- In 2008, Boston and Maine Corporation, a part of Pan Am Railways, filed for abandonment of a segment of the Concord-Claremont Railroad approximately one mile long, located in the City of Concord.
- The Surface Transportation Board approved the abandonment of a former railroad line known as the Lakeport Spur in the City of Laconia. No traffic had moved over the Line for over twenty years and the land had long ago been developed for a commercial boat storage facility and marina. Although an official action by the board that provides federal oversight of railroads, the abandonment was essentially a real estate exercise and did not affect the state’s functioning rail network.

Corridors Potentially Subject to Abandonment

Pan Am Railways has initiated the environmental process for abandonment of the Main Line-East (Hampton Branch). The portion of this line to be abandoned is 10 miles long, extending between Portsmouth and Hampton. The railroad used to serve the Foss Manufacturing facility in Hampton, however there has been no service on the line for over two years.

The Main Line-East is a continuation of the line known as the Hampton Branch (originally operated by the Eastern Railroad) that runs from Seabrook to Hampton. The Main Line-East and Hampton Branch were the subject of a feasibility study by the Rockingham Planning Commission in 2001 of commuter rail service along the corridor. In addition, there has been strong interest in the route as part of the East Coast Greenway, a national bike path.

There appears to be the potential for continued transportation use of the corridor whether it be rail or trail. Among the conclusions of the commuter rail study were: “Continue to preserve the corridor for commuter rail use; support NHDOT purchase of abandoned New Hampshire portions of the line; ensure



stabilization of the Newburyport Merrimack River Bridge condition, and encourage any rail-trail to be constructed to allow for shared use”.

In either use case, the State Trails Plan (2005) notes that there are potential security concerns related to the use of the southern portion of the line (between Seabrook and Hampton) since the line is within the exclusion zone of the Seabrook Nuclear Power Plant. In addition, there are power poles located within the right-of-way. Representatives of the New Hampshire Seacoast Greenway have discussed rerouting options with plant officials.

The Berlin Mills Branch also has a high potential for abandonment in the coming years. The former mill in Berlin is now being reconstructed as a biomass power plant and the role of freight rail serving the plant is unclear. The switch that provides the connection to the mill property on the northern portion of the line has been removed and therefore the former mill site is not currently accessible. It is reasonable to suspect that if the power plant cannot utilize the rail line, that either a portion or the entire line may be abandoned.

Potential for Future Rail Use

The 2005 State Trails Plan identified five abandoned rail corridors that are considered to have possible future rail use, as shown in Table 2-4. It is projected that when the Main Line-East is officially abandoned, it will be added to the list as part of the Hampton Branch with a possible future use for commuter rail service, otherwise there have not been any changes either within New Hampshire or across the New England region that would modify the list. However, it is always possible that economic development initiatives could change the demand for local rail service along a currently abandoned corridor. This would be most likely to occur along lines that are nearby or directly connected to active lines, thereby minimizing the cost of re-establishing service. Although such a development is not presently proposed or projected anywhere, it should always be considered as a possibility.

Table 2-4: Abandoned Rail Corridor Future Rail Use Potential

Railroad Name	Limits	Length (miles)	Possible Future Rail Use
Hampton Branch	Seabrook to Hampton	4.2	Commuter Rail
Upper Coos Railroad	Whitefield to Jefferson	1.9	Freight Rail
Conway Branch	Ossipee to Conway	21.3	Freight Rail & Passenger/Excursion Service
Northern Railroad	Boscawen to Lebanon	60.2	Boston-Montreal High Speed Rail
Manchester and Lawrence Branch	Salem to Manchester	23.0	Commuter Rail & Freight Rail

2.5.3 Intermodal Freight Connections

Intermodal connections between the rail system and other freight transportation modes are integral to the operation of the New Hampshire rail system as part of a broader regional and national network. These connections enable the transfer of freight from other modes to rail or vice versa.

There are multiple locations within the state or nearby where rail interacts with other modes. Intermodal connections include:

- Intermodal Facilities, where trucks and railroads transfer cargo, typically containers;
- Seaport, where products can be transferred between ship and rail; and



- Transload Facilities, where products are stored in a rail car for direct transfer to delivery trucks.

Freight rail intermodal connections made in New Hampshire are generally for transfer of commodities with trucks. Trucks easily provide the collection and distribution of commodities to businesses across New Hampshire from transload or intermodal container facilities. There are some commodities that are transferred between rail and ship made possible with the proximity of the railroad and the seaport facilities in Portsmouth. Transfer of freight between air and rail does not generally occur within New Hampshire. Air freight is typically high value material for which a premium is placed on the delivery schedule. The local collection or distribution function for this type of shipment is best handled by truck. The following section provides a description of the existing locations and functions for intermodal connections that serve New Hampshire.

Intermodal Facilities

Although there are no intermodal facilities currently located within New Hampshire, most points in the state are within about 100 miles of one or more of the three major intermodal facilities located in adjacent states and two additional regional terminals are within approximately 250 miles²². 100 miles is considered the average drayage distance for intermodal facilities where the cost of the intermodal movement is viable for the majority of shipments. However, for some commodities drayage distances of up to 250 miles can be considered. These longer drayage trips are most appropriate for cross-country trips, such as international shipments from Asia via Los Angeles.

The three facilities within typical drayage distances are located in Worcester and Ayer, MA and Auburn, ME. Two additional regional facilities are located at Mechanicville, NY and Montreal, PQ, providing additional intermodal service into New Hampshire. Figure 2-9 displays the intermodal facility locations and their 100 mile drayage distances, while Figure 2-10 shows their 250 mile drayage distances. Table 2-5 shows mileages from selected points in New Hampshire to each of these five intermodal facilities.

Figure 2-9: Short Haul Drayage Distances to Regional Intermodal Facilities



²²Drayage is the term used for the movements of loaded or empty trailers or containers between rail yards, ports, or shipping terminals. Drayage distances of 100 miles or under are usually defined as short haul, while movements between 100 and 250 miles are categorized as regional hauls.



Figure 2-10: Regional Drayage Distances to Regional Intermodal Facilities

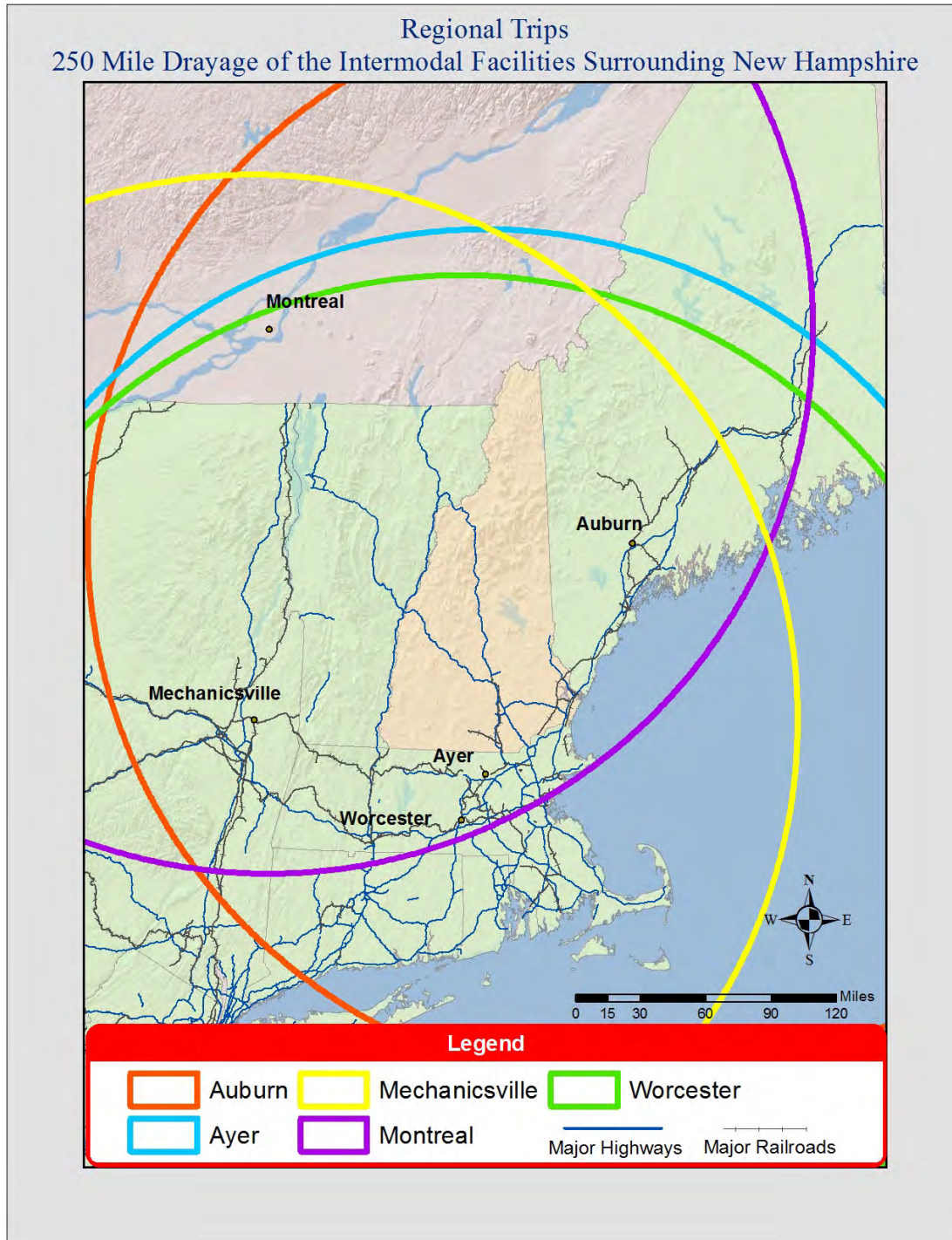




Table 2-5: Drayage Distances to Regional Intermodal Facilities

New Hampshire Location	Drayage Distances (miles)						
	Intermodal Terminal Location (Railroad)						
	Worcester, MA CSX	Ayer, MA NS/PAS	Auburn, ME SLR/CN	W. Springfield, MA CSX	Mechanicville, NY NS/PAS	Montreal, QC CN	NYC/NJ CSX/NS
Concord	91	52	137	132	145	253	275
Nashua	58	19	139	112	205	276	246
Manchester	75	36	122	128	156	258	266
Lincoln	154	115	91	187	189	192	340
Berlin	204	165	72	241	244	179	379
Littleton	175	137	103	199	202	168	336
Lebanon	144	105	190	126	129	188	275
Portsmouth	90	64	83	143	236	301	277
Colebrook	228	189	103	246	249	130	393
Color Legend							
Local Drayage (<100 Miles)							
Regional Drayage(101- 250 Miles)							
Regional Drayage for west-coast shipments (250-300 Miles)							
Out of Service Area>299							

Table 2-6 shows the available service to/from the intermodal terminals at the regional terminals.

- From Worcester, MA, service is available to CSX intermodal terminals in the central and southeast part of their system as well as to the western gateways of Chicago and East St. Louis where connections are available to UP, BNSF, KCS, Iowa Interstate, CP and CN.
- From Ayer, PAS/NS provides service only to Chicago with connections available to all terminals in the western US and Canada.
- SLR/CN provides service from Auburn to every terminal on the CN system in the US and Canada, including Chicago, where connections are available to western railroads.
- The new PAS/NS terminal at Mechanicville, NY provides additional capacity to and from Chicago, where connections are available to western railroads.
- Intermodal service via the CN terminal at Montreal, QC also provides an option to access the CN's extensive intermodal network.

Through these three key terminals in Massachusetts and Maine and the two additional regional terminals in New York and Quebec, New Hampshire businesses have access to most of the intermodal terminals and container ports in North America.

It is important to note that direct intermodal service from these terminals is entirely to points outside of the Northeast. Since most of the truck shipments from New Hampshire are to locations within the Northeast, or within 250 miles, the potential for significant shipments to move via intermodal service is limited. However, in cases where long-distance shipments are required, the opportunity for New Hampshire businesses to utilize intermodal movements through the regional intermodal facilities is an important advantage.



Table 2-6: New Hampshire Intermodal Service Availability

Direct Intermodal Service Available in New Hampshire From Key Intermodal Terminals in Adjacent States ¹

	to/from	Vancouver, BC	Prince George, BC	Edmonton, AB	Calgary, AB	Saskatoon, SK	Winnipeg, MB	Brimley, ON	Montreal, QB	Moncton, NB	Hartford, CT	Chicago, IL	Auburn, ME	Detroit, MI	Jackson, MS	Memphis, TN	New Orleans, LA	Jacksonville, FL	Miami, FL	Orlando, FL	Council Bluffs, IA (New Inst.)	East Saint Louis, IL	Indianapolis, IN	Cincinnati, OH	Northwest, OH	Nashville, TN	Savannah, GA	Knoxville, TN	Charleston, SC
Origin	Auburn, ME - SLR/CN																												
Dest	Auburn, ME - SLR/CN																												
Origin	Montreal, CN																												
Dest	Montreal, CN																												
Origin	Worcester, MA - CSX ²																												
Dest	Worcester, MA - CSX ²																												
Origin	Ayer, MA - NS/PAS																												
Dest	Ayer, MA - NS/PAS																												
Origin	Mechanicville, NY - NS/PAS																												
Dest	Mechanicville, NY - NS/PAS																												

Notes

- 1 Connecting service to Western railroad terminals available at gateways such as Chicago or East St. Louis.
- 2 Worcester service is subject to change during construction of the new CSX terminal. Matrix shows current service as representative of likely service from Worcester once terminal reconstruction is complete.

Sources

CN Ramp to Ramp Train Schedules Eff Feb 10, 2011, www.CN.ca
 CSXT Intermodal Core 53 ft Lanes from CSXT.com 07/11/2011
 Nscorp.com on Mechanicville opening 1/16/2012 - The terminal will offer service for containers only

Worcester, MA – CSX

CSX currently has intermodal terminals in Boston, MA (Beacon Park Yard) and Worcester, MA that serve traffic to and from New Hampshire. The Worcester terminal is currently being expanded as part of the CSX shift of freight operations from Boston to Worcester. During construction, the Worcester terminal is handling shipments from only two origins, Cleveland and Indianapolis. Outbound domestic and international service is being handled temporarily by other nearby locations and is likely to change as construction continues. CSX started construction on the new Worcester terminal in June 2011 and expects completion during the second half of 2012.

Once construction on the new terminal is complete, CSX will close its Boston intermodal terminal and the Worcester terminal will be the CSX hub for intermodal shipments to Boston and the surrounding area including New Hampshire. Upon completion of an on-going vertical clearance project between Selkirk, NY and Worcester, CSX will be able to offer full double stack service to the Worcester terminal.

Through the terminal improvements, the capacity will double from 100,000 lifts/year to 200,000.²³ When shipments from Beacon Park move to Worcester, the terminal is expected to be handling 140,000 lifts per year, leaving capacity for another 60,000 annual lifts.

The Worcester terminal is being expanded from 59 to 79 acres, adding about 100 additional trailer/container parking spots. There will be four tracks for handling containers/trailers and CSX will replace the current piggy-packers (side loaders) with four overhead cranes for lifting trailers and containers on and off rail cars.

²³ A lift is to move a single container or trailer onto or off of a rail car, either empty or loaded. Thus a facility that handles 5,000 loaded containers and trailers a year may have 10,000 lifts per year, assuming that the loads and empties handled were exactly the same, which typically is not the case.



Ayer, MA – PAS/NS

The terminal in Ayer, MA has two loading/unloading tracks, each about 3,000 feet. This limits train size to a maximum of 6,000 feet, an important constraint for intermodal trains. PAS/NS provides daily service between Ayer and Chicago. Double stack service is not available at Ayer. However, federal funding has recently been secured to begin the engineering work for a major vertical clearance improvement project that will enable future double stack service direct to the Ayer Terminal.

Auburn, ME – SLR/CN

The Auburn terminal consists of two 1,200 foot long tracks that accommodate transfer of containers and trailers between truck and rail. The design capacity of this facility is approximately 48,000 lifts per year but it is currently handling only 4,000 to 5,000, therefore there is capacity to grow. Opened in 1994, the facility was originally a 35-acre terminal that has since been expanded to over 50 acres to accommodate additional trailer/container parking.

Four trucking companies serve the Auburn Intermodal facility and these include: Bisson Transport, Manchester Motor Freight, Pacer Cartage Inc. and Roadlink. These companies serve all of New England and provide customer pick up and deliveries to customers throughout the region. This terminal is 140 miles north of Boston and is less than three miles from I-95. Typical inbound goods that pass through this facility via rail from west coast ports include consumer goods for LL Bean in Freeport and wine from California for liquor stores in Maine and New Hampshire. The inverse movement of truck to rail consists primarily of trucks arriving with rolls of paper that are shipped westbound to printing operations in the Midwest.

Auburn's intermodal freight moves over the SLR into Canada and its connection to Canadian National's transcontinental main line at St. Rosalie, Québec (east of Montréal). Double-stack container service via Canadian National is available at Auburn to all terminals on the Canadian National System in the US and Canada and via connection to western railroads in Chicago. This service is marketed by CN as if Auburn was a CN terminal. The Auburn terminal has benefited from double stack vertical clearances, a positive balance of inbound / outbound loads and its connection to Canadian National's transcontinental intermodal system. In addition, this terminal is the only C-TPAT-certified facility in New England.²⁴

Other Accessible Terminals

New Hampshire intermodal customers can also access the P&W intermodal terminal in Worcester, the CSX terminal in West Springfield, MA, the PAS/NS Terminal in Mechanicville, NY and the CN's terminal in Montreal, QC. However, in the case of P&W terminal, normal service is limited and it is currently serving a temporary role, in coordination with CSX, to provide capacity to CSX during the Worcester terminal reconstruction. While a longer dray is required from most points in New Hampshire, the others do provide additional capacity. In the case of Montreal, the terminal provides direct rail service to locations not currently available from the Massachusetts and New York terminals.

Seaports

The Market Street Terminal in Portsmouth, NH, is a commercial port that handles nearly 300,000 tons of freight annually. Located within a mile of Interstate-95, the port is also rail accessible and has recently begun to receive freight by rail.

²⁴ The Customs-Trade Partnership Against Terrorism (C-TPAT) is a voluntary government-business initiative to build cooperative relationships that strengthen and improve overall international supply chain and U.S. border security. Through the program participants are asked to ensure the integrity of their security practices and communicate and verify the security guidelines of their business partners within the supply chain.



Salt, sand, and scrap metal are the primary commodities received and shipped, but the port also provides specialty services on-demand to businesses located upstream and other customers. The terminal handles the following commodities:

- Bulk cargo (scrap, salt, wood chips)
- Break bulk (industrial and machinery parts, construction materials)
- Project cargo (power plant components, vacuum tanks)
- Container cargo

Eight to ten ships full of steel are exported to Turkey annually and road salt is imported via the port and distributed throughout New Hampshire, Massachusetts and Maine.

The current length of the port's longest wharf is 582 feet; however the U.S. Army Corps of Engineers' Piscataqua River Federal Navigation Channel could accommodate vessels of up to 750 foot long and 35 feet of draft at mean low water. Efforts are underway to obtain funding to lengthen the existing main wharf at the port by 125 feet. This would enable more efficient operations and the opportunity for additional cargo handling. The port recently added an additional 50,000 square feet of ground storage and cargo staging through demolition of an on-site, but unused warehouse.

Located at the terminal is a 50,000 square foot covered warehouse, and the Market Street Terminal is designated as a foreign trade zone. For the purpose of duty assessment, goods entered into the trade zone are considered to be outside the commerce of the United States and, therefore, no duty is paid while in the zone.

Truck is the primary intermodal connection at the port since most deliveries from the port are not conveniently or economically made via rail, however direct rail access is provided via the Pan Am Railways' Portsmouth Branch that connects to their main line at Newfields, NH and traverses the Market Street terminal. The port is actively receiving inbound rail for maritime export at Market Street.

In addition to the Market Street Terminal there are other facilities along the Piscataqua River that ship and receive marine freight that could be moved on land via rail. The Newington Branch is located along the eastern shore of the Piscataqua River, providing both rail and maritime access to industries in the area, including the PSNH Schiller Station. PSNH has been receiving coal shipments at the Schiller Station and trucking the material to the Bow plant. They have determined that this movement is not economical via rail. However, this is one example of the types of freight connections that may be possible in the area. A replacement is being planned to the Sarah Mildred Long Bridge, which crosses over the Piscataqua River that would enable larger ships to access upstream port facilities and therefore may change the economies of rail shipments from the port area. In addition to the port connections in Portsmouth, a rail connection also extends across the river to the Portsmouth Naval Shipyard in Kittery, ME.

Transloading Facilities

There are a number of current locations where bulk goods and other commodities can be transferred from rail cars to truck for final delivery. Specific locations include:

- Bow,
- Canterbury,
- Claremont,
- North Stratford,
- North Walpole,
- Portsmouth,
- Rochester,
- West Lebanon, and
- Whitefield.



Transloading provides the economies of long-haul rail service with the flexibility of on-demand local truck delivery direct to non-rail served locations. These facilities can be especially important for customers along existing or former branch lines where volumes can no longer support direct rail service. Transload facilities provide economic benefits to existing rail customers, while also building volumes of rail traffic that could support further rail infrastructure improvements.

2.6 Passenger Rail System

The New Hampshire passenger rail system consists of two Amtrak intercity services and three privately operated tourist excursion services. These trains improve connectivity for travelers to and from the state and support the state's tourism economy. The following sections describe passenger rail infrastructure and services across the state.

2.6.1 Intercity Passenger Rail

The two intercity passenger rail services that operate within New Hampshire are the Amtrak Downeaster between Boston, MA and Portland, ME, and the Amtrak Vermonter between Washington, DC and St. Albans, VT.

Amtrak Downeaster

In operation since December 2001, the Downeaster connects North Station in Boston, Massachusetts, to Portland, Maine with stops at eight intermediate stations, three of which are in New Hampshire. The Downeaster is one of Amtrak's fastest growing state-supported services. The service is managed by the Northern New England Passenger Rail Authority (NNEPRA).



Figure 2-11: Downeaster Route



Source: Amtrak

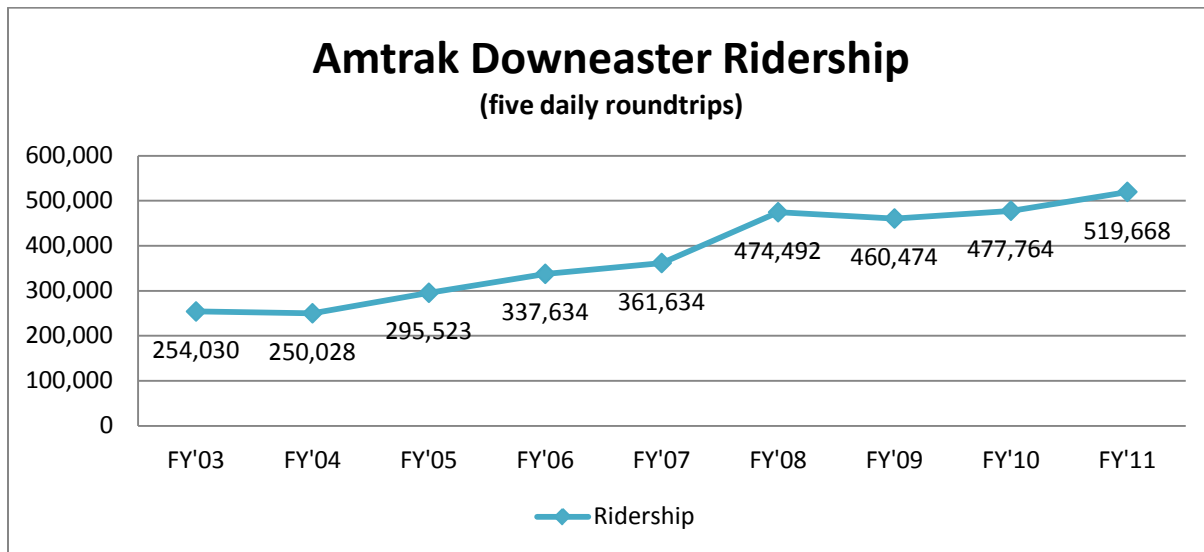


The Downeaster service operates five southbound and five northbound trains each day. The trip is generally scheduled to take 2 hours and 30 minutes between Boston North Station and Portland, ME²⁵. Although the Downeaster is an intercity service, it does serve many commuters, especially between the New Hampshire stations and Boston. The combination of service quality and service schedule makes this an attractive option for some commuters. For example, the 5:45 am southbound service out of Portland, combined with the 5:00 pm northbound train serves Boston-bound commuter schedules, and is especially attractive to commuters who do not need to make the trip each day.

Ridership

Ridership on the Downeaster has been increasing since its inaugural run in 2001. Federal fiscal year 2008 saw a large increase in ridership with the increase from four to five daily round trips. More recently, although the ridership between 2008 to 2009 declined by about 10,000 trips, to 460,474, the ridership quickly rebounded by adding over 17,000 trips for an annual total of 477,764 in 2010 and climbed to 519,668 in federal fiscal year 2011, which ran from October 2010 to September 2011.

Figure 2-12: Downeaster Ridership



The New Hampshire stations serve approximately 41 percent of the Downeaster riders. The distribution of the Fiscal Year 2010 ridership of 200,065 at New Hampshire stations is included in Table 2-7. The Fiscal Year 2011 total for New Hampshire ridership increased to 203,146.

Table 2-7: New Hampshire Station Downeaster Ridership (FY 2010)

Station	2010 Ridership	Share of Total Downeaster Riders	Share of NH Downeaster Riders
Exeter	89,152	18.3%	44.5%
Durham/UNH	54,467	11.2%	27.3%
Dover	56,446	11.6%	28.2%

²⁵ See Appendix B for Downeaster Schedule



Construction is currently underway for infrastructure to support an expansion of the service to Freeport and Brunswick, ME. This service expansion is anticipated to begin in the fall of 2012. As part of the overall effort to assure that the Downeaster service continues to grow and expand, NNEPRA is currently working on the development of a comprehensive Service Development Plan. The Service Development Plan will identify additional service opportunities, station and parking needs and capital program requirements, including infrastructure and equipment, to take advantage of potential ridership growth opportunities.

Rail Line

The Amtrak Downeaster service operates over a 116-mile route from Portland, ME to Boston, MA. Approximately 36 miles of this route, from Rollinsford to Atkinson, are in New Hampshire²⁶.

This segment of the line is primarily single track, with two two-mile sidings, one in the vicinity of Newfields and one in the Rollinsford-Dover area. Double track starts two miles north of the New Hampshire/Massachusetts border and continues into the Lawrence-Andover, MA area. The line is signaled and has centralized traffic control, with train dispatching performed by Pan Am Railways from its control center in North Billerica, MA. While there are some speed restrictions on this line, Pan Am Railways maintains this line to FRA Class 4 standard, which allows a maximum operating speed of 79 mph, although Pan Am does impose a maximum operating speed of 75 mph for the Downeaster trains. A brief description of the three Downeaster stations in New Hampshire follows:

Exeter Station:

This station consists of a 300-foot low level platform capable of accommodating three coaches. The station platform also includes a canopy and a “mini” high-level platform that allows passengers to access the train coaches without climbing stairs. There is free parking at the station for approximately 70 automobiles, on a first-come first-served basis. This station is owned and maintained by the Town of Exeter. An Amtrak “Quik Trak” automatic ticketing machine is available in Gerry’s Variety Store located adjacent to the station.

Figure 2-13: Exeter Station



Durham-UNH Station

This station is located on the University of New Hampshire (UNH) campus and owned by the University. The station building itself is an historic railroad station structure built in the early part of the twentieth century and relocated from Lynn, MA. The current platform was built in 2000 in advance of Amtrak Downeaster service. The station underwent a major renovation in 2008 using federal funds from the Congestion Mitigation and Air Quality Improvement Program and the Transportation Enhancement Program.

The main portion of the station is operated by UNH as a restaurant, while an interconnected vestibule and lobby provides a waiting area, restrooms, and a ticket machine for train passengers. Access to the train is provided from a low level platform and a mini high level platform for accessibility purposes. The platform is owned by UNH and the state and is partially located on property the state leases from Pan Am Railways and subleases to UNH.

²⁶ Operation in New Hampshire is between Milepost 239.5 and Milepost 275.5 on the Pan Am Railways Main Line- West



Approximately 200 weekday visitor pay-per hour or leased spaces are available to the public within 1000 feet of the station including meters on Depot Street and at the UNH Visitor Center, and leased spaces at the H-Lot and the adjacent Town of Durham-owned Depot Street lot. UNH parking is free on weekends. The UNH station does not offer free weekday park and ride parking. Additional transportation connections are provided by the UNH Campus Connector and Wildcat Transit systems as well as academic year service from C&J.

Figure 2-14: Durham/UNH Station

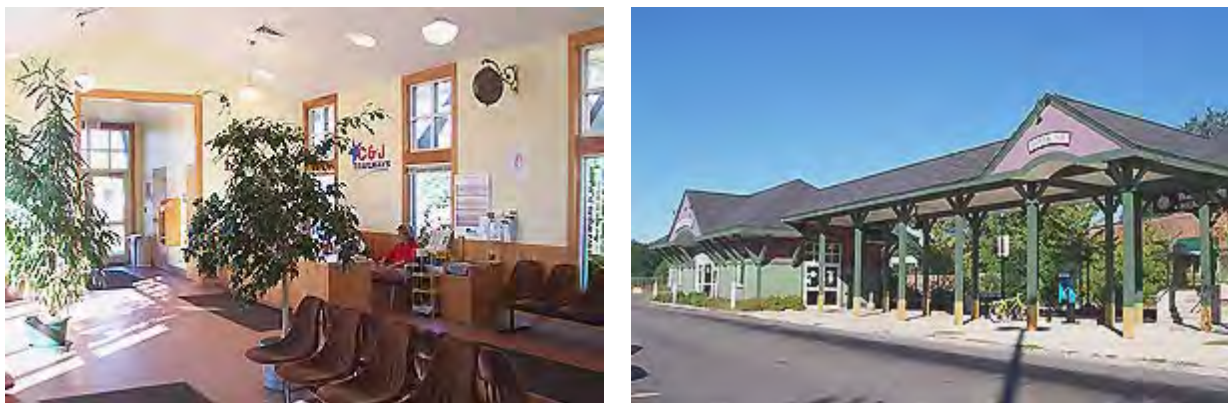


Dover Transportation Center

The Downeaster serves the Dover Transportation Center which is owned and operated by the City of Dover. The transportation center, which was built by the city in anticipation of the service, is also served by COAST and UNH Wildcat Transit bus services. An Amtrak “Quik Trak” ticketing machine is located in the building.

As with Exeter, the platform is 3 car lengths, with 2 low level sections on either side of a mini-high level section for accessibility purposes, with a canopy covering the mini-high level section. Parking is free and unmetered and there are marked spaces for 60 automobiles, including 25 spaces alongside the curb adjacent to the train platform that are marked for train passengers only. In addition, south and immediately west of the station, there is a non-striped paved area for another 325-350 automobiles.

Figure 2-15: Dover Transportation Center





Amtrak Vermonter

A second state-supported intercity passenger rail service, this one sponsored by the State of Vermont, also operates in New Hampshire, although making only one station stop, in Claremont, NH. The service has other stations that serve New Hampshire residents, White River Junction, Windsor, Bellows Falls and Brattleboro. This service, known as the Vermonter, provides one train a day in each direction between St. Albans, Vermont and Washington, DC, running as part of Amtrak's Northeast Corridor Regional intercity service between New Haven, CT, and Washington.

Unlike many services of this type where only one daily round trip is operated along the line, the trains stop in Claremont at relatively convenient times (11:34 AM southbound and 6:08 PM northbound), allowing a New Hampshire based passenger to conduct business in New Haven or Springfield into the afternoon and still arrive back in Claremont early in the evening.

Ridership

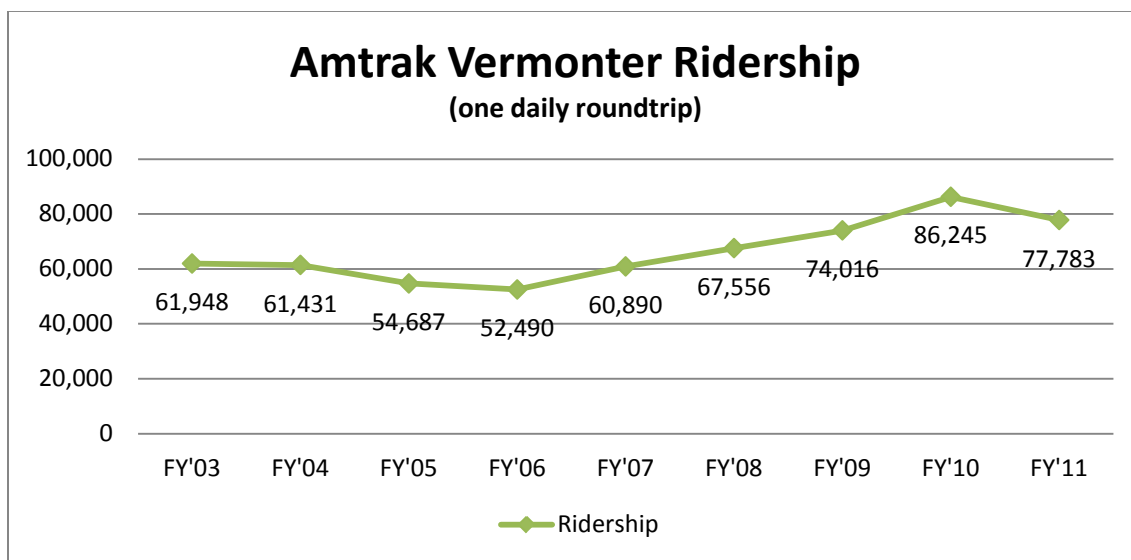
Overall ridership on the Vermonter between St. Albans, VT and Washington DC has been growing during the past few years after a similar decline earlier in the decade. This previous decline in ridership was primarily a result of the elimination of on Thruway Motorcoach connection between St. Albans, VT and Montreal, QC in 2003. Ridership began rebounding in 2006 after signal improvements along the corridor were completed and changes to the service were made in Connecticut. Ridership in 2011 and 2012 has been down from previous levels due to service interruptions resulting from Tropical Storm Irene and track improvements.

Figure 2-16: Vermonter Service



Source: Amtrak

Figure 2-17: Vermonter Ridership





During the past four years the ridership on the Vermonter Service to/from the Claremont Station has also generally grown/declined consistent with the remainder of the service, as shown in Table 2-7, below:

Table 2-7: Claremont Station Vermonter Ridership

Fiscal Year	Boarding	Alighting	Total
2008	854	945	1,799
2009	848	925	1,773
2010	925	1,044	1,969
2011	N/A	N/A	1,240

Source: Amtrak - Note: Amtrak Fiscal Year runs from October 1 through September 30.

Ridership at the Claremont Station along with the nearby Vermont stations makes up approximately 46 percent of total Vermonter ridership.

Table 2-8: New Hampshire Area Station Vermonter Ridership (FY2011)

Station	Ridership
White River Junction, VT	14,109
Windsor, VT	687
Claremont, NH	1,240
Bellows Falls, VT	4,364
Brattleboro, VT	15,223
New Hampshire Area Station Total	35,623
Vermonter Service Total	77,783



Source: Amtrak.

Rail Line

The route of the Vermonter from St. Albans to New Haven, CT, where it enters the Northeast Corridor, encompasses 314 miles, of which approximately 24 miles are in New Hampshire, between Cornish and Walpole. This trackage is owned by the NECR and is single track, with a one-mile passing siding at Claremont Junction.

NECR maintains the track to FRA Class 3 standards, with a maximum operating speed for passenger trains of 59 mph. The line's condition is being enhanced through a major track renewal project funded by the American Recovery and Reinvestment Act of 2009 (ARRA). See Section 2.7.5 for a description of this project. The control system on the line is Centralized Traffic Control from the Rail America dispatching center in St. Albans, VT. There is one rail structure of note along this route in New Hampshire, which is the 2,000+ foot Claremont High Bridge over the Sugar River.

The Claremont station is situated on property owned by an auto dealer located across the tracks. While there is no enclosed waiting space, there is a bicycle shop adjacent to the station and passengers awaiting the train are allowed to use the bike shop restroom. The parking area is paved and lit and there is room for 50 cars. The platform is low level and accessibility is provided by means of a mechanical lift, which is located on the platform. Maintenance is provided by a contractor.



2.6.2 Tourist Railroads

Two tourist railroads operate in New Hampshire: the Conway Scenic Railroad and the Plymouth and Lincoln Railroad. Both of these railroads operate along segments of state-owned lines in the White Mountain region of the state.

The Conway Scenic Railroad (CSRR)

The Conway Scenic Railroad begins its tourist railroad season in mid-April and operates through New Year's, with a seasonal adjustment of service frequencies. Services include short trips of less than one hour beginning at the CSRR home terminal in North Conway, NH, to Conway, or a longer trip of just under two hours to Bartlett. Longer trips of five to five and one-half hours to Crawford and Fabyan are also made, beginning in mid-June.

The shorter services are operated two or three times a day in each direction, depending on the time of year, and the longer service is operated once a day. In addition, there are a significant number of special events and special trains offered by CSRR.



Rail Line

The Conway Scenic Railroad (CSRR) utilizes 49 miles of State of New Hampshire-owned line and 7.5 miles of CSRR-owned line. The State-owned line is leased from the State of New Hampshire and, pursuant to that lease agreement, must be kept in at least FRA Class 1 condition, with a maximum operating speed of 15 mph. For the most part this track is kept in Class 1 condition, with some areas in Class 2 condition, with a maximum allowable operating speed of 30 mph for passenger trains.

The State-owned trackage also has some significant structures, including the historic Frankenstein and Willey Brook trestles, which have seen major work, including re-decking and pier reconstruction and strengthening in the past eight years, and are considered to be in excellent shape. The CSRR-owned trackage, between Conway and Conway Village, is mostly maintained at FRA Class 2.

The Plymouth and Lincoln Railroad

The Plymouth and Lincoln Railroad (P&L) currently operates two scenic railroad services, the Hobo Railroad and the Winnepesaukee Scenic Railroad.



The Hobo Railroad operates trips between Lincoln and West Thornton, NH. This 15 mile trips operates at different frequencies throughout the year. For example, the spring schedule offers two daily round trips on weekends only in May and early June. The summer, or peak, schedule from late June through Labor Day has four daily round trips. One of these trips is an evening dinner train. From September through October, the fall service provides two daily round trips on selected weekends. Finally, the winter schedule has a cluster of service days featuring a single daily round trip around Thanksgiving and on weekends only in December. In addition, there are a number of special event trains throughout the year.

The Winnepesaukee Scenic Railroad operates between Meredith and Lakeport, NH, with a station at Weirs Beach, a distance of approximately 10 miles. This service also features varying frequencies, adjusted seasonally as is the Hobo Railroad, with three weekend/holiday round trips in the Spring, three daily round trips in the Summer, and one weekend only round trip in the Fall.

Rail Line

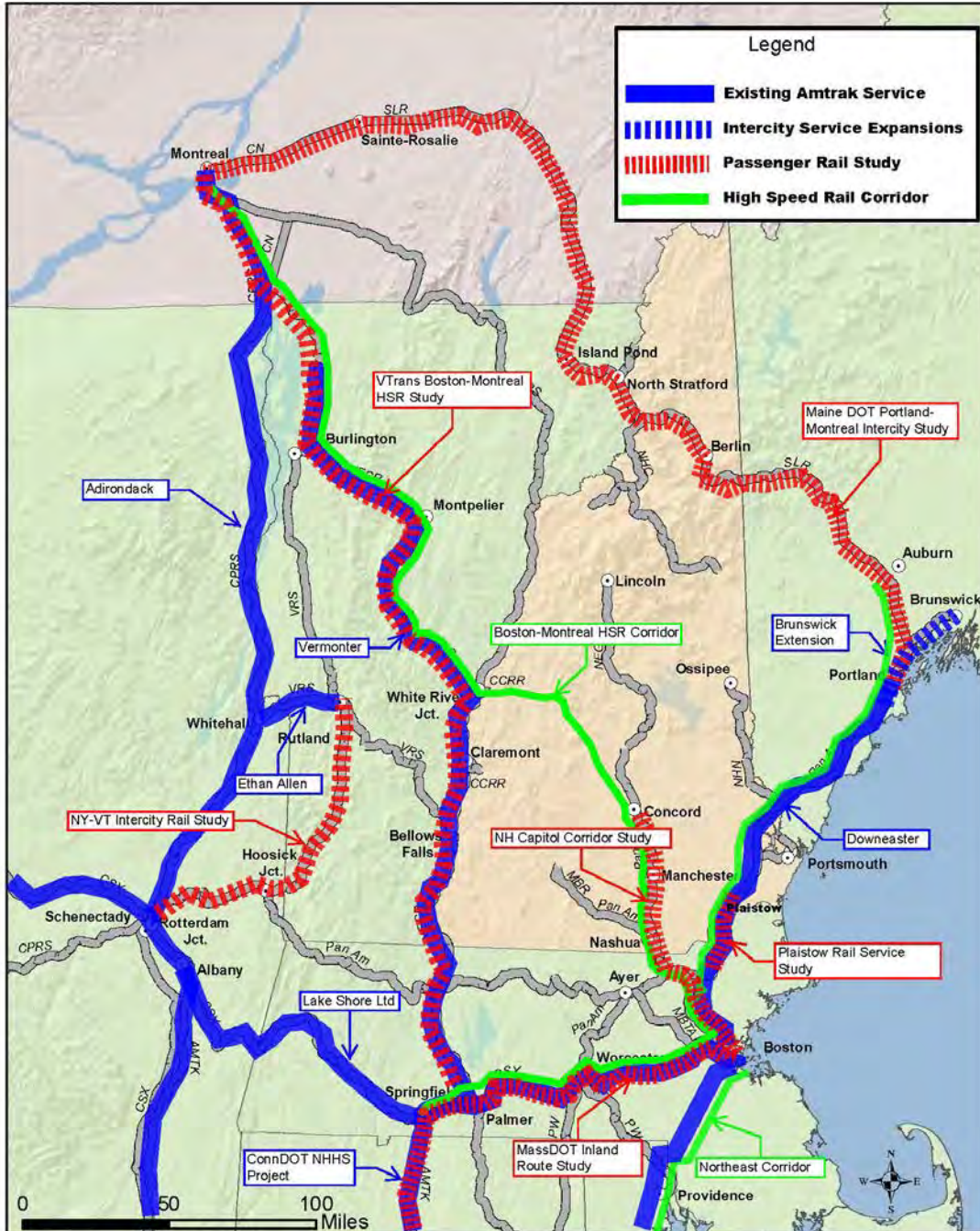
The P&L operates both services over trackage owned by and leased from the State of New Hampshire, under terms identical to the CSRR lease, i.e., the rail line must be maintained to at least Class 1 condition. The line that the Hobo Railroad operates along between Lincoln and West Thornton is single track. The Winnepesaukee Scenic Railroad operates between Meredith and Lakeport, NH. There are two structures of note along the line, a trestle in Ashland and a short bascule-type lift bridge in Lakeport.



2.7 Regional Rail System Projects

This section examines rail related studies or projects within the New England area and their impact on the existing or future rail network in New Hampshire. Studies that have examined corridors across much of New England are included first, followed by studies or projects that impact one or two states.

Figure 2-18: Regional Railroad Projects with impact to New Hampshire





2.7.1 New England Studies

There have been numerous studies conducted over the past decade that examined the New England rail system. The following section provides an overview of those regional studies.

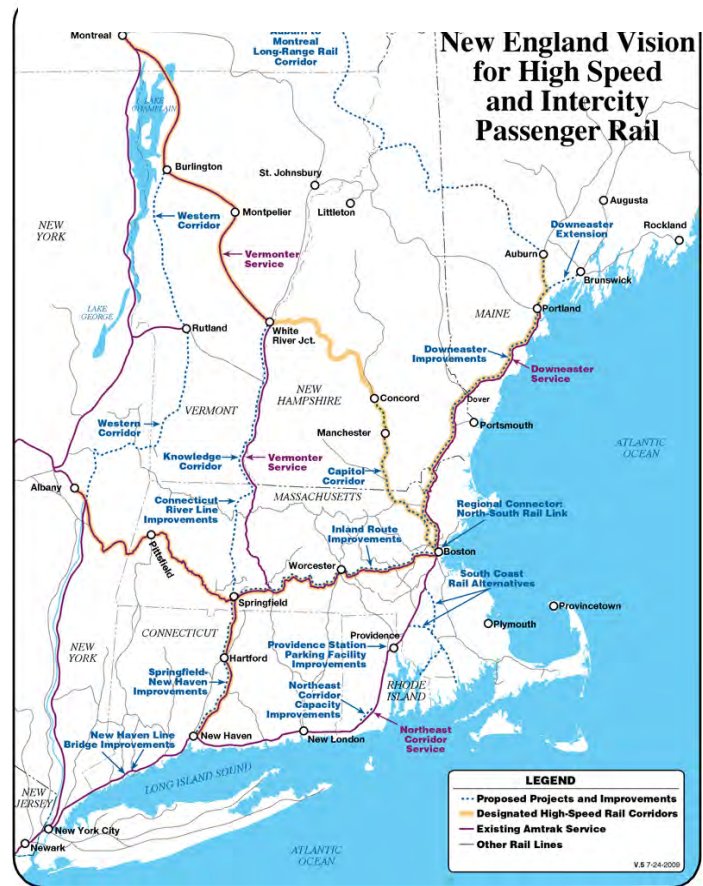
New England High-Speed Rail and Intercity Rail Network Vision

The six states in New England have come together to create a vision for a future regional rail system that will enhance New England in many ways, including: providing a foundation for economic competitiveness; promoting livable communities; and improving energy efficiency and environmental quality. This vision is based around a high-speed rail network that will link every major city in New England with smaller cities and rural areas and internationally to Montreal. This high-speed rail network is composed of a few key corridors, several of which directly and indirectly affect New Hampshire.

Figure 2-19 illustrates the envisioned network of corridors linking all of New England. This vision was developed by the Departments of Transportation of the six New England states, who have committed to work together to coordinate efforts. The vision includes the following key corridors and projects:

- New Hampshire Capitol Corridor (Boston to Concord, NH with potential extension to Montreal)
- Downeaster Improvements (with extension to Brunswick, ME)
- Inland Route Service Improvements (Springfield to Boston)
- Knowledge Corridor Improvements (Springfield, MA to White River Junction, VT)
- New Haven-Springfield Corridor Improvements
- Vermonter/NECR Passenger Rail Improvements including potential extension to Montreal
- Vermont Western Corridor (Albany, NY to Burlington, VT)

Figure 2-19: New England Vision for High Speed and Intercity Passenger Rail



Source: Vision for the New England High-Speed and Intercity Rail Network, 2009



Boston-Montreal High-Speed Rail Planning and Feasibility Study, Phase 1.

The Northern New England High Speed Rail Corridor was designated by the U.S. Secretary of Transportation in 2000. This federal designation allows states through which the high speed rail corridor passes to receive funds for study, design, and construction of high speed rail, as well as funding for highway/rail grade crossing safety improvements along the corridor. The Northern New England High Speed Rail Corridor has two branches in New England. The eastern branch extends between Boston, MA and Auburn, ME. The western branch connects Boston and Montreal, Quebec, extending through Concord, NH and Montpelier, VT.

The Boston to Montreal High-Speed Rail Planning and Feasibility Study, Phase I Final Report, prepared through a cooperative effort by New Hampshire, Vermont and Massachusetts, was completed in April 2003. The report concluded that projected fare revenue and ridership is sufficient to warrant further study and implementation of Phase II evaluations. The study indicated that implementation of high speed rail would require substantial rail infrastructure improvements that would be compatible with existing and future passenger and freight rail operations. The potential rail corridor identified for further study follows the New Hampshire Main Line and the Northern Line, passing through Nashua, Manchester, Concord and Lebanon.

Northeast Rail Operations Study (NEROPs), Phase I

The June 2007 NEROPs Phase I Final Report was prepared for the I-95 Corridor Coalition as a tool to educate policymakers and the public about the Northeast rail system; identify issues, chokepoints, and constraints (physical, operational, and institutional) that hinder development of rail traffic; and provide a foundation and a process that would allow the Northeast states to begin identifying and prioritizing specific system wide issues and chokepoints that cross jurisdictional, interest, and financial boundaries.

The Phase I report found that system capacity issues throughout the Northeast rail system result in decreased levels of service and reliability, delays at key yards and facilities that cascade throughout the rail network, and a diminished capability of passenger and freight trains to share infrastructure effectively. The age of the rail system in the Northeast region, coupled with the social, financial, and environmental constraints to making large-scale improvements, contributes to specific physical chokepoints such as clearance and weight restrictions. Outdated bridges, tunnels, and viaducts, primarily near New York City and Boston, present a challenge to both railroads and their customers, as there is little redundancy within the region.

NEROPs Conclusions

- The passenger and freight rail systems in the northeast are generally stable and productive and are an important part of the transportation mix in the region.
- Physical, operational, and institutional issues in the region will not allow the rail system to absorb further freight and passenger growth.
- Regional and short line railroads are a critical element of intermodal freight transportation and distribution in the region, but their continued viability is vulnerable in some cases. The decline of regional and short line railroads would have significant impacts on the region's transportation system and economic competitiveness.
- Freight rail issues are often overlooked in the traditional statewide and metropolitan transportation planning and programming process.

NEROPs Recommendations

- Present findings and information to legislators and other transportation decision-makers on the importance of rail to the region.



- Actively participate in regional and national rail planning and policy efforts.
- Better integrate freight and freight rail issues throughout the transportation planning and programming process.
- Work cooperatively as a region to more specifically identify and address key rail chokepoints.
- Develop and apply methods to better quantify public benefits of rail investments.
- Actively participate in developing and refining approaches to address Amtrak issues in the region.
- Work together in developing a consensus-based list of potential improvements.

The conclusions and recommendations of the NEROPs study, which was conducted for the entire Northeast Region, hold true for the State of New Hampshire whether considered alone or as part of the regional transportation network.

Northeast Can Am Connections: Integrating the Economy & Transportation

The Northeast Can Am Connections Study was a regional study led by the State of Maine and was conducted to assess the adequacy of transportation connections across the region from an economic development perspective. The 2009 study included parts of Maine, New Hampshire, Vermont and New York State, as well as Nova Scotia, Newfoundland and Labrador, Prince Edward Island, New Brunswick, Québec and Ontario and was sponsored by each states and province in the study area.

The study first examined existing transportation and economic conditions as well as recent trends in economic performance. It showed that by most conventional measures the region has not been performing as well as some other parts of North America. The region is challenged by constraints on access and connectivity, due to a combination of topography, trans-border regulations and policies, and historic patterns of transport investment that are not well adapted for international trade and regional growth.

The second phase of the study examined needs and opportunities for improvement. It concluded that increasing trade and dependence on international markets throughout the region is requiring faster and more efficient transportation systems to facilitate the movement of goods and services. Since the Can Am region is located in a strategic geographic location, it could be poised to capture a larger share of trade to and from North American markets with some transportation capacity and expansion. However, that potential will not be realized as long as the region is constrained by regulatory inconsistencies affecting truck movements across the border, and limitations of truck and rail routes and their intermodal connections with ports.

To pursue strategic approaches to enhancing the region's economy, a series of investment alternatives were identified which involved various combinations of actions including:

Regulations - Harmonization of truck size and weight regulations across both sides of the border.

Borders - Achievement of seamless movement across borders to enable shippers in both countries to take the most direct and lowest cost routes to both domestic and overseas destinations.

Railroads - Improvement of east-west rail movement, including near-term effort to enhance existing short-line rail services, and longer-term investment in a high speed intermodal rail corridor that can enhance access to ports across the region.

Highways - Investment in upgrading one or more east-west highway routes to provide more direct access across the region, faster movement from the Great Lakes region to Atlantic ports, and more efficient inter-connections with existing north-south highways.



Internal Networks -A more complete system of rail and highway connections within the region and across the border, to complement Canadian and US gateway development.

Intermodal Ports and Interchange Facilities – Enhancement of port facilities, direct freight routes to ports, and development of inland ports and intermodal interchange facilities.

The findings indicate that the potential needs for transportation capital investments can be substantial, but that the economic stakes (gains from taking action, or losses from failure to act) are potentially even larger. In addition to the benefits that could be gained by the entire study area through this type of transportation investment, New Hampshire could benefit by:

- Expanding access through development of enhanced railroad and highway routes and services to and from east and west points
- Developing intermodal centers where upgraded east–west rail or truck routes intersect with existing north–south truck and rail routes to create freight and trade “crossroads.”
- Reducing vulnerability to future bottlenecks by reducing dependence on truck and rail routes that require passing through the increasingly congested New York metropolitan area.

2.7.2 *New Hampshire Projects*

New Hampshire Capitol Corridor

In 2007, the New Hampshire legislature created the New Hampshire Rail Transit Authority (NHRTA), which has responsibility for prioritizing and implementing passenger rail in New Hampshire. NHRTA, in conjunction with the NHDOT, identified the Lowell-Manchester-Concord “New Hampshire Capitol Corridor” (NHCC) as the top priority for passenger rail in the state.

The NHCC connects the two New England state capitals of Boston, MA and Concord, NH. This corridor is part of the federally designated Boston to Montreal High Speed Corridor. Establishing passenger rail service on the NHCC could also be the initial phase of establishing passenger rail service on the Boston to Montreal high speed rail corridor.

Implementation of commuter rail service along the southern portion of the New Hampshire Capitol Corridor has been previously pursued by the Nashua Regional Planning Commission (NRPC), in partnership with the State of New Hampshire, the Federal Transit Administration (FTA), the City of Nashua, the Massachusetts Bay Transportation Authority (MBTA), and the railroad owner and operator. The proposed commuter rail service would have extended existing MBTA services to Nashua and would provide an alternative to a highly congested highway corridor. In May 2000, FTA approved NHDOT’s request to initiate preliminary engineering on the project. However, since that time, the project has not progressed into final design due to issues primarily related to funding availability and financing.

NHDOT has developed a scope of work for the NHCC project for a grant from FTA to conduct an Alternatives Analysis for service between Boston and Manchester. This study will re-examine costs, ridership, impacts and operating requirements for the service.

The NHCC would connect major New Hampshire population centers with existing MBTA passenger rail service along currently active railroad right-of-way. The current use of the right of way for the NHCC includes commuter service provided from Lowell, MA to Boston, MA (North Station) by the MBTA. The freight line from Lowell to the New Hampshire/Massachusetts state line is owned by Massachusetts Department of Transportation (MassDOT). The freight corridor from the New Hampshire/Massachusetts state line to Concord, NH is owned by Pan Am Railways.



In addition to the Alternatives Analysis for commuter rail service, NHDOT has secured a grant through the High-Speed Intercity Passenger Rail program administered by the Federal Railroad Administration for an evaluation, planning, and environmental study for intercity rail service connecting Boston and Concord. The NHCC intercity service is envisioned to serve North Station in Boston, Lowell, Nashua, Manchester and Concord as well as the Manchester Boston Regional Airport.

New Hampshire law requires legislative approval before passenger rail projects are implemented. See Section 5.2.2, Passenger Rail, for further description of passenger rail project requirements.

I-93 Transit Investment Study

NHDOT, in consultation with the Federal Highway Administration (FHWA) and the Massachusetts Executive Office of Transportation (MA EOT), now known as MassDOT, undertook a study of transit alternatives along the corridor connecting Boston, MA to Manchester, NH. The goal of the study was to determine future transit investments necessary to feasibly meet mobility needs within the study area and to develop a strategic plan for implementation of recommended options. Work on the study was completed; however, the final report has not been published.

The study examined both rail and bus transit alternatives that would utilize either the I-93 corridor or existing railroad rights-of-way. Following a screening process, the final alternatives for future consideration included a Bus on Shoulder alternative, where buses would utilize the shoulders of I-93 during congested periods; and a commuter rail service from I-93 Exit 5 to Boston, using the former Manchester & Lawrence Line (M&L), MBTA Haverhill Line, and the Wildcat Branch to connect to the Lowell Line.

Both the bus and commuter rail service alternatives showed a demand for approximately 5,000 inbound boardings each day. The capital cost estimate for the bus alternative ranged from \$112 to \$132 million for costs directly attributable to the bus service, although the estimates did not include the costs of related planned highway improvements. The capital cost estimate for the rail alternative was \$250 million.

Conway Branch Feasibility Study

In 2003, the New Hampshire legislature enacted a law requiring the Department of Transportation to study the cost and feasibility of restoring rail service on the Conway Branch line between Conway and Ossipee, where active service ends. The line was abandoned in 1972, and the state completed purchase of the abandoned segments in 2001. The Department's study assessed the condition of rail, ties, and ballast on the line, as well as drainage and vegetation. The 11 legal at-grade crossings and 15 bridges were also evaluated.

The study suggested that an incremental approach to restoring the line might be a cost-effective way to avoid large expenditures in the absence of business on the line. The study estimated that \$7.5 million would be needed to restore the line to operating condition. In the longer term, replacing the rail on the line would be required if heavy freight loads were moved, at an additional estimated cost of \$11 million.

The report reviewed potential uses of the corridor, primarily for freight service; possible commodities included wood chips to a biomass plant in Tamworth, other wood products, and petroleum fuels. The study included a well-attended public meeting and other opportunities for comment. Possible issues that arose during the study included displacing snowmobile use on the corridor and the impact of trains returning to the long-inactive line on some abutters. The legislature has not acted on the study since its completion in 2004.



Massachusetts Projects

Knowledge Corridor

On January 28, 2010, U.S. Department of Transportation awarded \$70 million for final design and construction of the Knowledge Corridor along the Connecticut River rail line in western Massachusetts. The competitive grant award is part of the High-Speed and Intercity Passenger Rail program.

The Knowledge Corridor - Restore Vermonter Project will return Amtrak's intercity passenger train service to its original route by relocating the Vermonter from the New England Central Railroad back to its former route on the Pan Am Southern Railroad in Massachusetts. The Pan Am Southern route provides a shorter and more direct route for the Vermonter between Springfield and East Northfield, MA, and improves access to densely populated areas along the Connecticut River. The Pan Am Southern route would include station stops at the former Amtrak station at Northampton and the new intermodal station at Greenfield. The routing of Amtrak service in Vermont, New Hampshire and south of Springfield, MA will remain unchanged.

A separate study sponsored by the Pioneer Valley Planning Commission (PVPC) in conjunction with the MassDOT determined that the expansion of intercity passenger rail service has the potential to be a major component in producing economic revitalization, spurring job creation, improving air quality, increasing overall mobility and reducing vehicular traffic congestion. Such an expansion would increase service along the Connecticut River Line through New Hampshire by adding another round trip train each day.

Fitchburg Line Improvement Program

The Fitchburg Commuter Rail Line has the oldest infrastructure in the MBTA system. It also is the longest in terms of both distance and travel time and serves a region with limited commuter options. On December 14, 2009, the MBTA received a grant of \$10.2 million for the first stage of a project to improve speed, service and reliability on the Fitchburg line.

The project, which received an additional \$39 million in ARRA funding for double-tracking and \$150 million in FTA New Starts funding, will support the installation of new switches and signals as well as two new renovated stations and the reconstruction of existing track. The installation of a new universal crossover at the Leominster will enhance both freight and commuter rail operations in the region.

When complete, the Fitchburg Commuter Rail Line Improvement Project will provide modernized, state-of-the-art infrastructure allowing 80 mile-per-hour travel speeds along the line, up to 12 percent better on-time performance and reduced operating and maintenance costs. Planning for the project has also contemplated the potential for extension of the service to Gardner, MA.

Patriot Corridor

On May 15, 2008, Norfolk Southern (NS) and PAR announced the formation of a joint venture called Pan Am Southern (PAS) and branded as the Patriot Corridor. PAS conducts freight rail operations and maintains rail infrastructure from Mechanicville, NY into Massachusetts with direct connections to the New England Central Railroad at Northfield, MA, the Providence and Worcester Railroad at Gardner, MA and with PAR at Ayer, MA. The new entity was approved by the US Surface Transportation Board and PAS began operations early in 2009.

This joint venture enhances rail competition in New England with the addition of another Class I freight railroad operating east of the Hudson River. The track upgrades represent a significant private investment in the New England rail system. An important element of the joint venture is the rehabilitation of the main line between Ayer and Mechanicville, NY. The \$47.5 million improvements began in 2009. The partnership commitments include rehabilitation of 138 miles of track, upgrading the



corridor to handle 286,000 pound rail cars, replacement ties, and just over 35 miles of new rail. Additionally, a new intermodal and auto terminal will be constructed in Mechanicville, NY and expansions and improvements will be made to the auto and intermodal facilities in Ayer, MA.

Creation of PAS has greatly improved the physical condition and operations of the former PAR lines. Most significantly, the Patriot Corridor provides access to the Norfolk Southern to the west and south and to the Canadian Pacific Railway System (CP) to the west and north.

CSX/Massachusetts Partnership

In 1999, the former Conrail rail lines in Massachusetts became part of the CSX System. With the addition of these lines, CSX obtained direct connections to the State of New Hampshire via PAR at Rotterdam, NY and at Worcester, MA and via the New England Central at Palmer, MA. With a deeper reach into the south and west, CSX was positioned to grow its business to and from New England. Even after the creation of the Patriot Corridor, CSX maintains a competitive connection with the PAR system at Worcester, MA. PAR was formally recognized by CSX in 2011 as a top regional railroad achieving joint traffic growth.

In 2008, CSX and the Commonwealth of Massachusetts entered into joint agreement that will result in double stack intermodal service to Worcester, MA in exchange for the Commonwealth gaining control of other lines in Eastern Massachusetts for expansion of commuter rail operations.

Specifically, as part of the agreement MassDOT and CSX are making the investment to realize full double stack access (20'-8" vertical clearance) between Worcester and the New York border by raising or undercutting 31 bridges and completing other upgrades on the line. Massachusetts invested \$79 million toward this effort which is planned for completion during the second half of 2012.

CSX is also planning to move its intermodal operations from Beacon Park Yard in Boston to Worcester, MA. The move will include closing the Beacon Park intermodal terminal. CSX intermodal service for eastern New England (including New Hampshire) will now be centered in Worcester, where CSX is investing \$100 million to expand its Worcester intermodal terminal. CSX expects to complete the construction of the Worcester terminal and relocation of non-intermodal freight operations to other locations in late 2012.

The immediate benefit to New Hampshire will be improved intermodal service to and from New Hampshire via the new, expanded Worcester intermodal terminal. While Worcester is farther from many points in New Hampshire than Beacon Park, the new terminal will be more efficient and will provide New Hampshire industries with full double stack intermodal service to and from most intermodal terminals and container ports in North America.

As with the Patriot Corridor, the CSX/Massachusetts project also brings improved rail infrastructure closer to New Hampshire.

2.7.3 Maine Projects

Brunswick Extension

On January 28, 2010, the Northern New England Passenger Rail Authority (NNEPRA) received approval for a \$35 million grant from the federal government to fund improvements to expand Downeaster service to Freeport and Brunswick. The project includes the rehabilitation of approximately 30 miles of track, installation of signals and upgrades to 36 grade crossings. Pan Am Railways began work on the line in summer 2010. NNEPRA hopes to have passenger rail service to Brunswick before the end of 2012. This extension of Downeaster service will expand the locations that are accessible by train from New Hampshire. When completed, New Hampshire residents will be able to access Freeport, ME, home of LL



Bean, and other locations along the coast of Maine during the summer through a connection with the Maine Eastern Railroad in Brunswick.

Downeaster Service Plan

NNEPRA was awarded a \$600,000 High Speed Intercity Passenger Rail planning grant from the Federal Fiscal Year 2010 transportation appropriation to develop a Service Development Plan (SDP). The service development plan will be a defined, coordinated plan to implement a shared vision. The SDP will build on past and present plans and objectives of stakeholders to develop a program of improvements that will have operational benefits, protect current investments, improve performance and build a foundation for higher speed services in the future.

The SDP will reinforce the commitment of the states and their agencies to coordinate regional planning and balance resources to allow the growth of freight, commuter and intercity passenger rail. The SDP will be consistent with Federal Railroad Administration guidelines and will also include a draft environmental review document for the corridor. The SDP will be completed in mid-2012.

Portland to Lewiston / Auburn & Montreal Intercity Passenger Rail Feasibility Study

The Maine Department of Transportation (MaineDOT), in cooperation with the Androscoggin Valley Council of Governments and Northern New England Passenger Rail Authority, undertook this study to identify intercity rail service extensions that could be implemented in the area northwest of Portland, ME and beyond to Montreal, Canada. The potential rail services that were assessed in the study included two alternatives that would include the extension of the existing Amtrak Downeaster Service; one to Auburn, ME and one to Bethel, ME. The third rail alternative studied was a new service that would be operated independent of the Downeaster. This service would run between Portland, ME and Montreal, Quebec.

The service studied between Portland and Montreal would pass through New Hampshire along the St. Lawrence and Atlantic line. The stations contemplated included: Portland, Auburn, South Paris, and Bethel, Maine, Berlin and North Stratford, NH, and Sherbrooke, St. Hyacinthe, St. Lambert, and Montreal in Quebec. The total trip time between Portland and Montreal is estimated to be about 7 hours, 20 minutes. The trip between Portland and Berlin is estimated at just over 2 hours. Annual ridership for the service is estimated by the Amtrak ridership model to be approximately 200,000 trips. Construction cost estimates to implement the service ranged from \$676 million to \$899 million, depend on the environmental impacts and the level of double track that would be required, which would be determined as the project is further developed. The annual operating subsidy for the service is estimated to range from \$17 million to \$18.5 million. The exact figure would depend on the level of service, the amount and type of infrastructure (e.g. track, signals) associated with the proposed alternative, and the actual ridership.

The next step identified in the study was to determine and implement the needs identified in the ongoing Downeaster Service Development Plan. Implementation of each rail alternative in the study relies on improvements to the Downeaster service to be completed first. It was recommended that only upon improvement to the existing Downeaster service, should extension to Auburn, Bethel or Montreal be considered.

Mountain Division Study

A study of the Mountain Division was completed in 2007 for the Maine Department of Transportation with the goal of evaluating the existing conditions, potential use and the likely cost of implementing rail service (passenger or freight) along the line. The study included the entire 50 mile corridor in Maine (from Portland to Fryeburg) and a 10 mile segment in New Hampshire. The study concluded that there was insufficient demand to warrant commuter rail service in the corridor. The lack of demand is a result



of the low population density in the corridor combined with the long train travel times in comparison to auto travel times.

According to the study, the opportunity for tourist/excursion service appeared more feasible but would require interstate cooperation to develop a regional network of interconnected rail lines. The study indicated that while the capital cost to initiate this service was significant in isolation, the addition of either freight or commuter service would make the tourist/excursion service more viable.

Regarding freight service, the study concluded that a seasonal freight operation may be possible if the movement by rail of aggregate from locations along the corridor was competitive with shipment by truck. Other considerations in determining whether to initiate freight rail service included an assessment of whether the capital costs to upgrade the railroad could be secured.

2.7.4 Vermont Projects

Vermont/NECR Rail Improvements

Vermont recently received \$52.7 million in ARRA funding for high-speed and intercity passenger rail improvements that will fund track and bridge improvements on the New England Central line between St. Albans, VT and the Massachusetts state line. The NECR is contributing \$18 million of their own funds as a local match to this project.

The purpose of the Vermont/NECR Rail Improvements project is to improve the conditions of the track, roadbed and bridges along the current route of the Amtrak Vermonter Service in Vermont and New Hampshire, resulting in an increase in track speed for a distance of 45 miles to 79 mph and the remaining 145 miles from 55 mph to 59 mph. These improvements will reduce the travel time by up to 27 minutes and guarantee more consistent year round on-time performance for the train.

While the primary aim of these improvements is to improve operating conditions for passenger services, freight operations on the corridor will benefit similarly. The project is expected to reduce freight travel time by one hour along the line and weight limits will be increased to 286,000 pounds, which helps to ensure the future viability of this line as a regional through route.



2.8 Rail System Management and Planning

Management and planning for the State's rail system includes multiple levels of government and agencies. Each organization has particular set of roles and responsibilities in the goal of maintaining and improving the network. The principal public organizations included in management and planning for the rail network are the New Hampshire Department of Transportation, the New Hampshire Rail Transit Authority, Regional Planning Commissions, and Metropolitan Planning Organizations. These organizations are involved in a planning process that involves the development of multiple plans, each with a different time frame and purpose. A description of the general roles and responsibilities of each organization and the major planning activities is included in the following sections.

2.8.1 *New Hampshire Department of Transportation*

The responsibilities of the Department include planning, developing and maintaining the state transportation network to provide for safe and convenient movement of people and goods through the state by means of a system of highways and railroads, air service, mass transit and other practicable modes of transportation in order to support state growth and economic development, and promote the general welfare of the citizens of the state.

2.8.2 *New Hampshire Rail Transit Authority*

The mission of the NHRTA is to develop and provide commuter and passenger rail and related public rail transportation services in New Hampshire. The Authority has established the vision for its efforts, as follows.

Develop and implement comprehensive, coordinated and prioritized project and funding plans for passenger rail services that provide New Hampshire citizens:

1. Commuter rail services to in-state and out-of -state employment centers,
2. Tourist services to recreation areas,
3. Easy access to regional inter-city passenger rail services and other multi-modal transportation systems.

2.8.3 *Regional Planning Commissions*

The State is divided into nine planning regions. Each area is served by a Regional Planning Commission (RPC), which develops regional transportation plans. The RPCs develop priorities for transportation improvements and services and work with the NHDOT to implement those priorities.

2.8.4 *Metropolitan Planning Organizations*

Four Metropolitan Planning Organizations (MPOs) coordinate transportation planning in areas with a population of 50,000 or more. In New Hampshire, the four MPOs comprise the Southern New Hampshire Region, the Nashua Region, the Rockingham Region and in the Strafford Region. Each MPO has responsibility for preparing a Long Range Metropolitan Transportation Plan for the region and a Transportation Improvement Program (TIP) that lists and prioritizes regional transportation projects to be funded within the next four years. The MPOs have included rail in their transportation planning efforts and have been supportive of passenger rail development.



2.8.5 Statewide Plans

There are numerous statewide plans that address the future of the state's transportation network. The following section provides a summary of the goals for each of the plans.

State Development Plan

The State Development Plan, by statute, sets the statewide context for state planning and investment for all agencies. The Office of Energy and Planning (OEP) prepares the document in cooperation with other state agencies and for adoption by the Governor. By design, it is intended to integrate planning, programs, and investments made by the State.

New Hampshire Climate Action Plan

Over the course of 2008, through a process that engaged over 125 stakeholders and received input from over 200 citizens, the 29 members of Governor John Lynch's Climate Change Policy Task Force developed a Climate Action Plan for New Hampshire. The plan is aimed at achieving the greatest feasible reductions in greenhouse gas emissions while also providing the greatest possible long-term economic benefits to the citizens of New Hampshire. The Climate Action Plan notes that the most significant reductions in both emissions and costs will come from:

- substantially increasing energy efficiency in all sectors of our economy,
- continuing to increase sources of renewable energy, and
- designing our communities to reduce our reliance on automobiles for transportation.

The Climate Action Plan points out that New Hampshire's economic future and its response to climate change are inextricably linked and New Hampshire needs to focus on how New Hampshire's energy is produced and how it is used. Future economic growth in New Hampshire as well as mitigation of, and adaptation to, a changing climate will depend on how quickly the state transitions to an economy that is based on a far more diversified energy mix; more efficient use of energy; and development of our communities in ways that strengthen neighborhoods and urban centers, preserve rural areas, and retain New Hampshire's quality of life. Recommendations and actions related specifically to the State's rail system include:

Encourage appropriate land use patterns that reduce vehicle-miles traveled:

- Action - Develop Model Zoning to Support Bus/Rail Transit

Develop a model zoning ordinance governing land use around bus/rail service access points to promote ridership and reduce greenhouse gas emissions. Encourage, assist, or require municipalities to adopt and implement this zoning around bus/rail stations. The model language would define criteria for minimum development density; mix of land uses; and interconnected walkable street patterns. Grants for specific technical assistance to support implementation of the model zoning ordinance could be awarded to communities, and/or incentives could be provided to encourage adoption.²⁷

Reduce vehicle-miles traveled through an integrated multi-modal transportation system

- Action - Maintain and Expand Passenger Rail Service

Maintain and expand passenger rail service within New Hampshire as part of a balanced, state-wide, multi-modal transportation system that keeps the state competitive with and accessible to the region. Initial actions would focus on sustaining and improving existing passenger rail service. Near- to mid-term actions would focus on improving and expanding New Hampshire's primary travel corridors (I-93 from Salem through

²⁷ The New Hampshire Climate Action Plan, NH Department of Environmental Services, March 2009



Manchester to Concord, and the full traverse of I-95 on the Seacoast). Long-term actions would address the goal of expanding passenger rail service throughout New Hampshire.

- Action - Maintain and Expand Freight Rail Service

Maintain and expand freight rail service within New Hampshire as part of a balanced, state-wide, multi-modal transportation system that keeps the state competitive with and accessible to the rest of the region. Initial actions would focus on sustaining and improving existing freight rail service. Near- to mid-term actions would include strategic improvements and expansions to increase freight rail usage – for example, track upgrades and restoration of lost rail connections to Canada, New Hampshire’s major trading partner. Long-term actions would address the goal of expanding freight rail service throughout the state. Because any substantial improvements to rail service will almost certainly require expenditure of public monies, attention to sustainable funding sources will be a priority.²⁸

Report on Growth Management

Each New Hampshire state agency is required to consider “smart growth” principles when providing advice, expending funds, or distributing grant monies, for public works, transportation, or major capital improvement projects, and for the construction, rental, or lease of facilities. In addition there has been a call for a coordinated and comprehensive effort by state agencies for economic growth, resource protection, and planning policy to encourage smart growth. In the effort to advance these requirements, the New Hampshire Council on Resources and Development (CORD) develops a report every four years reporting the consistency of state agency actions with the smart growth principles.

The November 2010 report included the following conclusions that relate to rail transportation:

By creating higher quality communities, through the mitigation of sprawl, we are creating communities with greater access and higher quality of life for all citizens. CORD encourages and supports the ongoing and future actions of individual state agencies, organizations, and municipalities that strive to implement the following actions and ideals into their siting decisions, policies, and programs. Collectively, and even individually, the following all promote development patterns that are consistent with the State’s smart growth principles.

- Land use development programs that reduce the number of vehicle miles traveled (VMT) through more compact development patterns. Sprawl increases the number of miles one must travel to reach key community destinations. In contrast, compact development, could additionally result in a reduced number of private vehicles on the highways, reducing the cost of road maintenance and reducing emissions and noise pollution, etc.
- Sustainable funding for transit including expanded bus and rail and enhancements to other modes of transportation. Access to matching funds to leverage federal grants to implement public transit would promote walkable communities and alternative transportation routes to the benefit of all while providing needed infrastructure for affordable housing and those with low-incomes and disabilities.
- Consider linkages via public transit between residential areas and commercial or industrial sectors when planning each. Increased transit connections have the benefits of supporting local economies and increasing quality of life. Additional consideration should be supported for the construction of commercial, industrial or residential facilities and highways in order to provide for public transit routes, scheduling,

²⁸ Ibid



clearances for buses, well-planned bus stop kiosks, and safe crosswalks for pedestrians, including wheelchair/walker users.²⁹

Long Range Transportation Plan

The Long Range Transportation Plan is developed by NHDOT in consultation with many stakeholders to identify long range (20 years) planning issues and the policies and recommendations for addressing those issues. It is a document that informs policy makers to assist them in establishing long-term direction for policies and investments for the state.

The Ten-Year Plan

The Ten Year Plan (TYP) identifies and prioritizes transportation projects in New Hampshire in an ongoing effort to address transportation needs at the local, regional and statewide levels. The Ten Year Plan is updated every two years, allowing transportation priorities to be revisited, existing projects to be removed as appropriate and allowing new projects to be added.

With the previous Ten Year Plan as a starting point, the Ten Year Plan process includes input from individual communities, development of Transportation Improvement Plans (TIPs) by the Metropolitan Planning Organizations (MPOs), numerous public hearings by the Governor's Advisory Commission on Intermodal Transportation (GACIT) and review and approval by the Governor and Legislature. Projects contained in the first four years of the Ten Year Plan form the basis for New Hampshire's Statewide Transportation Improvement Program (STIP), as required by federal law.

State Transportation Improvement Plan (STIP)

The STIP is the four-year State project listing for federally funded projects. The STIP is a federal requirement under the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU). Those requirements stipulate that each state will develop a continuing, cooperative, and comprehensive statewide multimodal transportation planning process, including the development of a statewide transportation improvement program (STIP). In New Hampshire the STIP is updated every two years and is developed through a coordinated statewide and metropolitan planning process.

The STIP includes projects, or identified phases of projects, only if full funding can reasonably be anticipated to be available for the project within the time period contemplated for completion of the project. Additionally, in the first two years of the STIP, funds for projects located in the non-attainment or air-quality maintenance areas of New Hampshire must be committed or available.

The STIP includes all projects contained in the Metropolitan Planning Organization (MPO) TIPs, as approved by the Governor. For non-MPO areas, the NHDOT uses the RPC TIPs as guidance, although project-by-project inclusion is not required. The TIP represents a strategy developed at the regional level to meet current and future transportation needs.

2.8.6 Regional Plans

The transportation planning process is carried out by the metropolitan planning organizations (MPOs) for metropolitan areas or the regional planning commissions for rural areas. This process includes the development and adoption of long range transportation plans and a Transportation Improvement Program (TIP).

²⁹ Report on Growth Management, New Hampshire Council on Resources and Development, November 2010



Long Range Transportation Plans

The long-range transportation plan identifies planned transportation improvements covering a planning horizon of at least twenty years for MPOs and ten years for RPCs. The goals of the plans are to foster (1) mobility and access for people and goods, (2) efficient system performance and preservation, and (3) good quality of life. The long range transportation plans include a financially constrained program of transportation projects within the region.

Transportation Improvement Program (TIP)

In the TIP, the MPO or RPC identifies the transportation projects and strategies from the long range plan that it plans to undertake over the next four years. All projects receiving federal funding must be in the TIP. The TIP is the region's way of allocating its limited transportation resources among the various capital and operating needs of the area, based on a clear set of short-term transportation priorities.

2.9 Rail Safety

Safety is one of NHDOT's primary functions, as it emphasizes safety in all of its efforts, including education, enforcement, project development and emergency response. As stated in the NHDOT Long Range Plan, the cornerstone of future NHDOT activities will center on the safety of the traveling public. Currently, New Hampshire ranks among the safest states measured by fatality rate. In 2005, there were 166 fatalities on New Hampshire's highways. The fatality rate for motorists was 1.24 persons per 100 million vehicle miles traveled. While over the last thirty years this rate has been reduced by over 50 percent, the goal is to reduce it even further.

According to Federal Railroad Administration records, there have been seven train accidents and 15 highway-rail incidents during the ten year period from 2002 to 2011. Although these events did not result in any fatalities, there have been three reported fatalities over that period involving trespassers. Nationwide, commuter rail and intercity passenger rail remain one of the safest ways to travel.

2.9.1 Rail Safety Oversight

Unlike the state highway system, in which NHDOT plays a major role in the safety of the system, the rail system is principally owned and managed by private entities, and therefore NHDOT must coordinate with the private rail companies and other agencies regarding rail safety. Additionally, most rail safety rules and regulations fall under the jurisdiction of the Federal Railroad Administration.

Federal legislation affecting railroad operations and practices titled, the Rail Safety Improvement Act of 2008 was enacted by Congress on October 1, 2008. The legislation reauthorized the Federal Railroad Administration (FRA) and provided funding for rail safety programs through 2013.

The legislation clarified the FRA's primary mission to ensure safety on the nation's railways. The legislation also authorized an additional 200 FRA safety and rail inspection employees and increased penalties for violations of safety laws. The legislation changed operating practices on railroads and introduced new safety requirements. Specific provisions include:

- Hours of Service Reform – Covering train service and signal employees limiting the total monthly hours and work schedules.
- Positive Train Control– Requires the implementation of “interoperable” positive train control systems for Class I freight and passenger rail carriers on lines carrying more than five million gross tons by December 31, 2015.



- Locomotive Cab Safety – Enabled the Department of Transportation (DOT) to establish new regulations on the use of cell phones and personal electronic devices.
- Grade Crossing Safety – Provisions to improve safety at grade crossings, including: establishes a toll-free number to report grade crossing problems; requires FRA to develop model legislation for states to assist in maintaining safe sight-lines and crossings free of debris; establishes a program to take a national grade crossing inventory and establishes a grant program to make emergency improvements to damaged crossings.

There are three key safety concerns with rail transportation:

- At-Grade Crossings
- Track Safety
- Trespassing

The following sections provide an overview of the status of the key safety concerns within the State of New Hampshire

At-Grade Crossings

There are 596 at-grade crossings in New Hampshire (Table 2-8). At-grade crossings occur wherever a railroad and roadway physically intersect. The roadways involved vary in ownership (both public and private) and type ranging from state highways to driveways to pedestrian pathways.

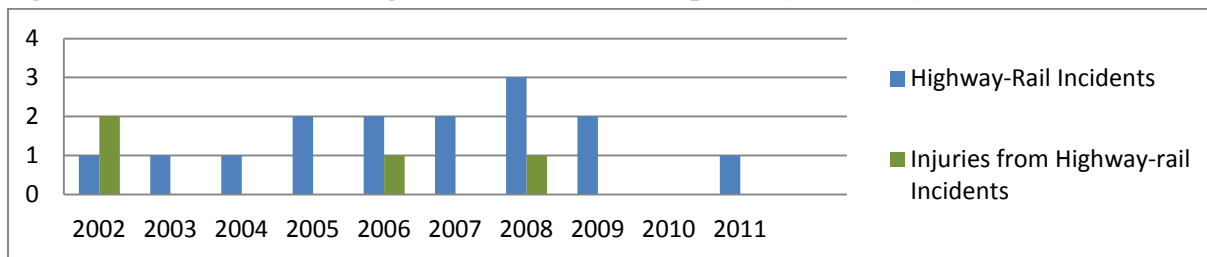
Table 2-8: Roadway-railway crossings in New Hampshire, 2011

At-Grade Crossing Type	Number
Pedestrian	15
Private	233
Public	348

Source: Federal Railroad Administration

Since 1996, accidents at highway-railway grade crossings have declined by more than 50 percent nationally. The annual number of at-grade crossing incidents in New Hampshire has remained low over the past decade, ranging from zero to three.

Figure 2-20: At-Grade Crossing Incidents in New Hampshire (2002-2011)



Source: Federal Railroad Administration Office of Safety Analysis

At-grade crossings are equipped with warning devices to alert vehicles and pedestrians of the presence of a rail crossing. These warning devices may be either passive or active. In New Hampshire 200 of the 348 public crossings include active warning devices.

Passive devices do not change when a train is approaching. Examples of passive devices include:

- Circular advance warning signs
- Stop signs



- Crossbucks (the familiar X-shaped signs)
- Pavement markings
- Median barriers

Active devices are triggered as a train approaches. For example, lights may flash and gates may be lowered. Examples of active devices include:

- Gates, either in two or all four quadrants of the crossing
- Flashing lights (cantilevered or mast-mounted)
- Bells
- Highway traffic signals

With 596 at-grade crossings in the state, rail crossing safety remains a challenge and priority. Actions that can be taken to improve at-grade crossing safety include minimizing the installation of new crossings of rail lines, increased education about the dangers of crossings, constructing grade-separated crossings or closing existing crossings.

Track Safety

Each railroad has the primary responsibility to inspect and maintain its track to the standards prescribed in the Federal Railroad Administration (FRA) track safety regulations. This includes establishing a track inspection and maintenance program, training its inspectors to identify non-compliant track conditions, making any necessary repairs, and maintaining accurate records of these actions.

The FRA has a division of Federal track safety inspectors that work along with 30 certified State inspectors, including one in New Hampshire, to monitor track conditions. This is done to determine whether a railroad is complying with federal safety standards.

FRA's track safety standards establish nine classes of track (Class 1 to Class 9), plus a category known as Excepted Track. The New Hampshire system includes track maintained to standards in Class 1 through 3, plus Excepted Track. Each class has a progressively more exacting standard for track structure, geometry, and inspection frequency and a corresponding maximum allowable operating speed for both freight and passenger trains. Table 2-9 presents FRA track classes for freight and passenger operations.

Table 2-9: Federal Railroad Administration Track Class Max. Operating Speeds

Track Class	Maximum Allowable Operating Speeds (mph)	
	Freight Trains	Passenger Trains
Excepted Track	10	N/A
Class 1	10	15
Class 2	25	30
Class 3	40	60
Class 4	60	80
Class 5	80	90
Class 6	N/A	110
Class 7	N/A	125
Class 8	N/A	160
Class 9	N/A	200

Source: 49 Code of Federal Regulations, Sections 213.9 and 213.30



Trespass

Trespassing on railroads presents both safety and security concerns. Even as roadway-railway crossing-related fatalities have declined, the number of trespass related fatalities has risen. Since 1997, trespass fatalities have become the leading cause of rail-related fatalities in the United States. During that same period, New Hampshire has experienced three trespass-related fatalities and seven injuries. The trespass deaths represent 100 percent off all fatalities related to the rail system over the past 14 years.

Trespass on railroad property is not very high on the list of issues that are of concern to the general public. However, trespassing on railroad property is illegal and violators are subject to arrest and a fine of up to \$1,000. New Hampshire law states “Any person in the state who enters upon any railroad property without license or privilege to do so shall be guilty of criminal trespass.”³⁰

Railroads, local jurisdictions, and state and federal agencies rely on a variety of measures to prevent and restrict trespass. Although most Class I railroads have police departments that can monitoring trespass issues and work with local public enforcement agencies, most New Hampshire railroads address the issue through a combination of deploying existing staff and coordination with local police departments. Although there is very little of the railroad right of way that is fenced, and all passenger stations are barrier-free, fencing along with lighting, gates and barricades are the primary measures that can be installed to discourage railroad trespass.

Education is another measure used to curb railroad trespass. Operation Lifesaver is a non-profit, international continuing public education program with trained and certified volunteer speakers who provide free safety presentations for various professions and for all age groups in order to increase public safety around railroad tracks. The New Hampshire Highway Safety Agency provides funding support for the organization for presentations at schools, driver education classes, public service organizations, safety and other fairs, other groups. State support assists the organization also with the continuing education of the presenters and state coordinators with attendance at regional and national operation lifesaver workshops.

2.10 Rail Security

National Defense

The Strategic Rail Corridor Network (STRACNET) is an interconnected and continuous rail line network consisting of over 38,000 miles of track serving over 170 defense installations. The Railroads for the National Defense Program in conjunction with the U.S. Federal Railroad Administration established this network to support defense deployment and peacetime needs. Rail transportation is extremely important to the Department of Defense for movement of heavy vehicles to seaports. In New Hampshire, the STRACNET line includes the route from Plaistow to the Portsmouth Naval Shipyard in Kittery, ME via Portsmouth. This includes a portion of PAR’s Main Line – West and all of the Portsmouth Branch

Transportation Security

Since the terrorist attacks of September 11, 2001, there has been increased vigilance and oversight of transportation activity in New England and the nation. Safety and security issues are an important element of the New Hampshire’s transportation system and the Rail Plan.

The primary agencies responsible for security or transportation modes in New Hampshire are the U.S. Department of Homeland Security, working through the Transportation Security Administration (TSA) and the New Hampshire Department of Safety. These agencies have addressed transportation security largely through identifying critical infrastructure assets, developing protection strategies for these assets,

³⁰ N.H. Rev. Stat. Ann. § 381:14 (1999). Also see § 635:2 for a definition of criminal trespass



and developing emergency management plans. The Department of Homeland Security addresses rail system security through the following means:

- Training and deploying manpower and assets for high risk areas,
- Developing and testing new security technologies,
- Performing security assessments of systems across the country, and
- Providing funding to state and local partners.

On November 13, 2008, the Department of Homeland Security announced new railroad security regulations to reduce the risk associated with the transportation of security-sensitive materials.

The Rail Security Rule required freight and passenger rail carriers to:

- Formally designate rail security coordinators, and
- Report significant security concerns to the TSA.

For freight rail, the rule established operational procedures for positive handoff of rail cars carrying security-sensitive materials between rail carriers and security protocols for custody transfers between carriers and shippers/receivers.

The Association of American Railroads, working with a number of federal agencies, as well as railroad industry, security industry and intelligence personnel, organized the Rail Security Task Force. This task force developed a comprehensive risk analysis and security plan for the rail system that included:

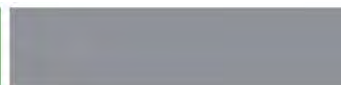
- A database of critical railroad assets
- Assessments of railroad vulnerabilities
- Analysis of the terrorism threat
- Calculation of risks,
- Identification of countermeasures, and
- Definition of, and actions to be taken at, various alert levels

The railroad industry maintains continuous communications with all departments and levels of national defense and transportation with regard to rail security.

The State of New Hampshire participates in rail security activities through coordination with federal homeland security agencies, the railroads, and activities of the Department of Safety. The State's Emergency Operations Center and NHDOT have initiated improved communication with Amtrak during power outages to maintain signal operations needed for passenger trains.



New Hampshire State Rail Plan





3. FREIGHT TRANSPORTATION TRENDS AND COMMODITY FLOW

Establishing and presenting a clear understanding of the goods that are transported by rail in New Hampshire is an important function of the Rail Plan. An important factor is determining how much freight originates and terminates in New Hampshire and how much rail traffic travels through the state. This information, combined with an evaluation of freight rail movements and major truck and water movements, facilitates understanding of intermodal connectivity and potential opportunities to divert freight movements on to the rail system.

The trade flow analysis conducted as part of the Rail Plan covers goods movement in New Hampshire and compares the following four major types of rail freight commodity flows:

- Inbound: goods originating outside of the state with a destination in New Hampshire;
- Outbound: goods originating in New Hampshire with a destination outside of the state;
- Internal (or intrastate): goods that have an origin and a destination in New Hampshire; and
- Through: goods that have both an origin and a destination outside of New Hampshire traveling through the state.

The following data sources were used in this analysis, in addition to industry and economic data for New Hampshire and findings from stakeholder outreach to carriers, shippers, and receivers.

- **Surface Transportation Board (STB): Carload Waybill Sample:** This data is a sampling of railroads that terminate (deliver) more than 4,500 cars per year. It provides insight into inbound, outbound, internal and through movements by various measures for the year 2009. Data from 2009 was the most recent information available for this Rail Plan in most cases. For the limited freight rail attributes where 2010 data was available, it has been included in the Rail Plan.

As freight movements of railroads that handle limited numbers of cars annually are not captured in the data, the Carload Waybill Sample analysis is considered to be representative of rail freight moved. It should be noted that because there are a number of railroads in the State that handle less than 4,500 cars annually, the data is likely under reported. Additionally, due to confidentiality requirements, most detailed information related to individual railroad commodity flows can not be published. For this reason, the analysis of commodity data is presented in the aggregate for the state.

- **Freight Analysis Framework (FAF):** This data is maintained by the FHWA and is publicly available with a geographic coverage of states and major metropolitan areas. The FAF provides data classified by freight tonnage and freight value and mode share. It does not cover through-trips, however, which is a key limitation of the data.
- **Commodity Flow Survey (CFS):** This is a shipper-based survey conducted every five years as a partnership between US Census Bureau and the Bureau of Transportation Statistics. It provides a modal picture of national freight flows, and is the primary source of national and state-level data on domestic freight shipments in the mining, manufacturing, wholesale, auxiliaries, and selected retail industries. Data is provided on freight types, origins and destinations, values, weights, modes of transport, distance, and ton-miles shipped. The CFS was conducted most recently in 2007.

The remainder of this chapter provides a description and analysis of freight transportation in the following categories:



- Freight transportation by mode,
- Freight transportation by commodity, and
- Freight rail trends.

3.1 Freight Transportation by Mode

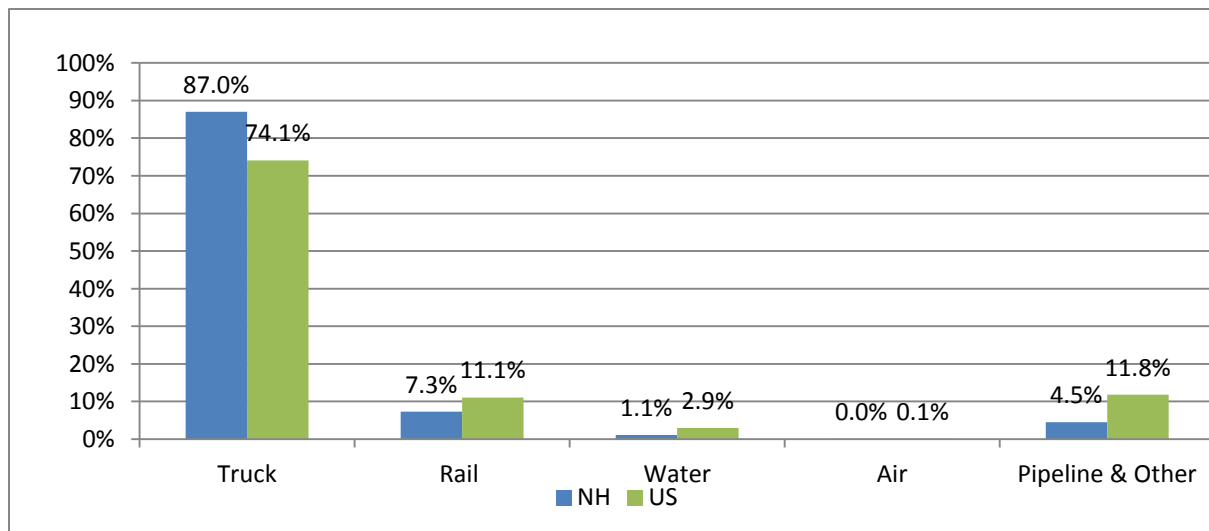
In 2009, 16.1 billion tons of freight by all modes was shipped in the United States and 37.4 million tons, excluding through traffic, were shipped in New Hampshire.³¹ New England as a region transported 300 million tons of freight with a value \$630 billion according to 2009 FAF data. Most of this cargo is currently shipped by truck into and out of the region.

Users of New Hampshire’s highways have an appreciation for the amount of freight that is transported by truck since cars and trucks share the roads. The available freight data (Figure 3-1) suggests that the state relies more heavily on truck transport than other states. Specifically, more than 87 percent of all freight tonnage transported in New Hampshire is shipped by truck. In the United States, the truck modal share is still significant but lower, with 74.1 percent of freight being truck-transported.

Nationally, the rail modal share is 11.1 percent. In New Hampshire, rail transports approximately 7.3 percent of all freight tonnage. While a smaller share of New Hampshire freight is transported by rail than the US in general, the tonnage shipped is significant. Rail transports an estimated 4.7 million tons of freight per year in the state.³²

To put the amount of freight transported by rail in the state into perspective, it is helpful to consider the rail tonnage in equivalent truck loads. A 75-car freight train has the capacity of 280 trucks. Thus, in New Hampshire, the annual movement of 4.7 million tons by rail equates to more than 188,000 trucks that would travel on the state’s highways if not for rail.

Figure 3-1: Modal Share in NH and US by Weight - 2009



Sources: Truck and rail tonnage obtained from FAF, AAR, 2009 STB Waybill Sample. Note: “Other” includes pipeline, other, and unknown. The “Truck” share also includes shipments categorized as multiple modes, and mail.

³¹ 2009 Freight Analysis Framework (FAF).

³² 2009 FAF, Association of American Railroads, 2009 rail traffic originating, terminating or passing through the state.



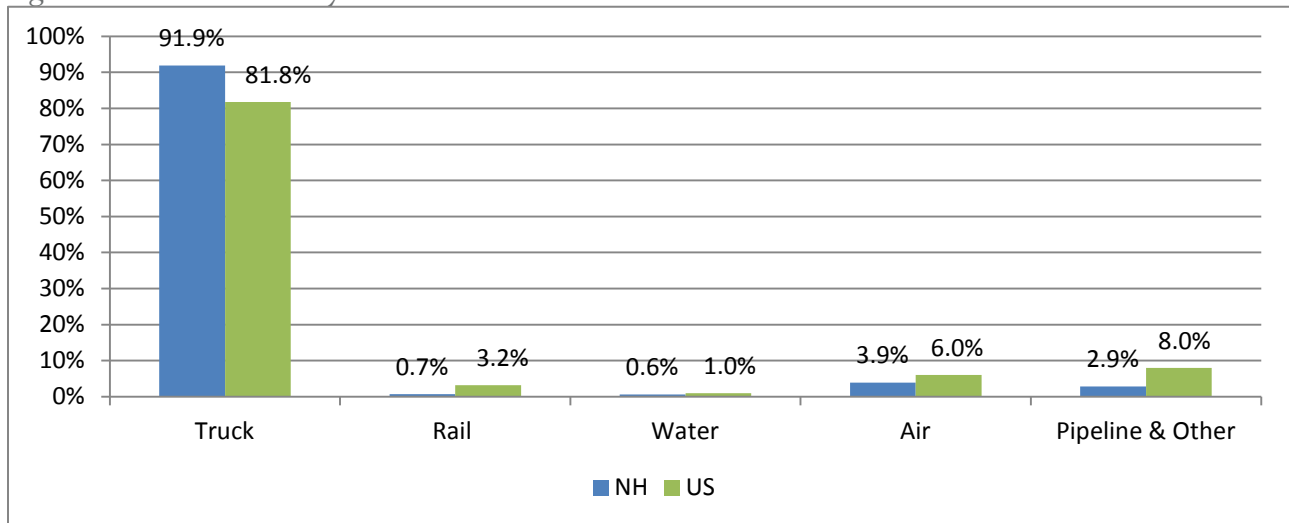
If the freight currently carried by rail was instead all handled by trucks, over 7.4 billion ton miles³³ would be added to the state highway system.

In the following sections modal shares of freight will be analyzed by weight and also by value. The use of the two commodity descriptors is helpful in presenting what the types of material are most likely to be shipped by rail. Knowing the type of material best suited to be moved by rail will assist with the understanding of the future for rail within the state.

Although the 4.7 million tons of freight shipped by rail is not a high percentage, it is still a substantial amount of traffic. However, when evaluated based on the value of freight shipped, the results are very different. By value, less than one percent of freight in New Hampshire is shipped by rail (see Figure 3-2). In the US, 3.2 percent of commodity value is shipped using the rail mode. In contrast, nearly 92 percent of freight in the state is shipped by truck or multiple modes when evaluated based on value.³⁴ Nationally, the truck mode share is approximately 82 percent. The conclusion from comparing modal shares of freight by weight versus value is that lower valued commodities tend to be shipped by rail. Since rail freight commodities tend to be bulk materials that are either raw materials or low-valued manufactured materials such as lumber or aggregates, the mode share comparison is logical.

The New Hampshire truck traffic modal share is likely higher than the national share due to New Hampshire's proximity to large markets, namely New York, Boston and Montreal that are located outside of the state. Most freight movements from these large markets to New Hampshire destinations are made by truck. This is because the proximity allows truck drivers to travel out and back to a location, such as a manufacturing plant, in a single work shift. Additionally, the routes for many rail movements within the state typically require a more circuitous trip than those made by highway, an issue which is exacerbated by the lack of active direct rail connections between the southern and northern segments of the state.

Figure 3-2: Modal Share by Value in NH – 2009



Source: 2009 FAF. Note: "Other" includes pipeline, other and unknown. "Truck" includes truck and multiple modes & mail.

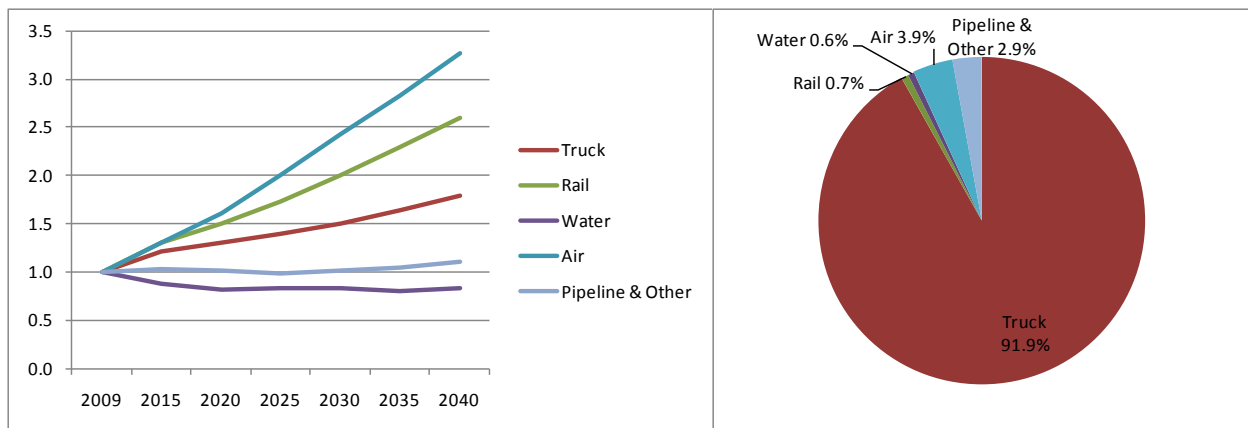
³³ This estimate assumes 15 to 18 tons of freight is transported by one truck.

³⁴ Multiple Modes is defined to include shipments typically weighing less than 100 pounds by Parcel, U.S. Postal Service, or Courier, as well as shipments of all sizes by truck-water, water-rail, and other intermodal combinations. It is assumed that the multiple modes category in New Hampshire includes almost exclusively small deliveries via truck.



While most freight in New Hampshire is transported by truck, the New Hampshire mode share index based on weight presented in Figure 3-3 demonstrates the anticipated growth in freight tonnage originating or terminating in the state. The index is the ratio of each year's freight tonnage, to the freight tonnage moved in 2009. As shown, based on the national Freight Analysis Framework projections, the growth in truck tonnage is expected to be less significant than the growth in rail tonnage. Only air transportation is expected to outpace rail in terms of increased tonnage shipped between 2009 and 2040. In fact, the tonnage shipped into and out of the state by rail is anticipated to increase 160 percent by 2040. In contrast, inbound and outbound truck transport is expected to increase at half that rate during the same time period.

Figure 3-3: NH Mode Share Index Based on Weight (Through Traffic Excluded)



Source: 2009 Provisional FAF for mode share pie chart and 2007 FAF for forecasts.
Note: Through traffic is not included, due to FAF data limitations

The importance of trucking to the transportation system in New Hampshire will continue, but the national modal share forecasts suggest that demand in New Hampshire to ship freight by rail is expected to increase over the next 30 years. This is significant and emphasizes the importance of maintaining the state's rail infrastructure and developing a strategic approach to making future rail investments to support the projected demand.



3.2 Trade Flows and Commodities

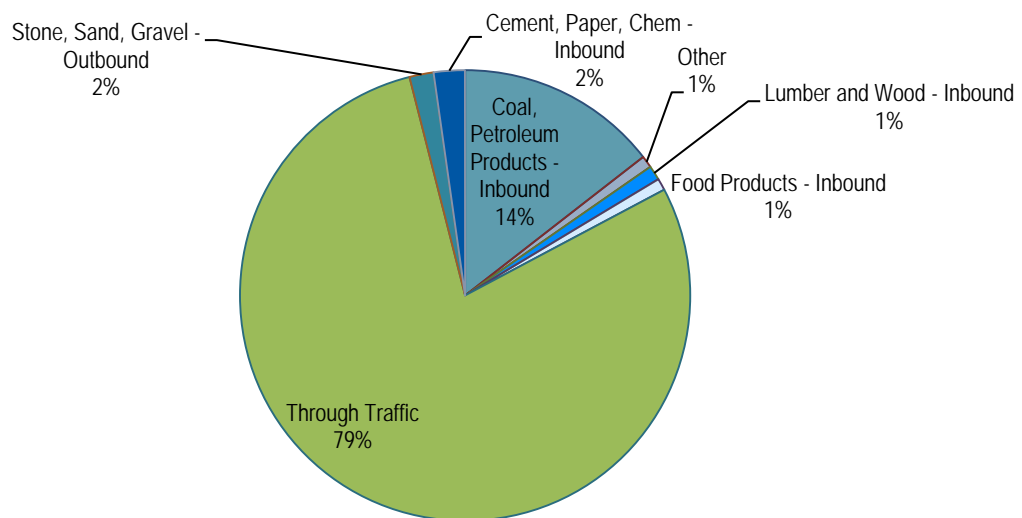
Understanding how freight is transported in New Hampshire is an important part of the commodity flow analysis conducted for the Rail Plan. Equally critical, however, is knowing what types of commodities are being transported by rail. This information is useful to assess whether the existing infrastructure is sufficient for the current trade flows, and it enables NHDOT to better understand the rail infrastructure required in the future to both maintain and grow freight rail as a mode of transport in the state.

3.2.1 Freight Rail Traffic by Commodity and Direction

As noted in the beginning of this chapter, freight movements are grouped into the categories of through, inbound, outbound and intrastate. These classifications are inclusive of all freight commodities. The percentage of each of these movement types is shown in Figure 3-4.

The through movement of traffic at 79 percent represents the largest share of freight rail traffic in New Hampshire. The principal reason for this is the large volume of interstate freight rail movements on the PAR, SLR, and NECR main lines. As identified in previous chapters, these rail lines connect to major regional, national, and Canadian rail routes. It should be noted that the high volume of through traffic should not be considered a negative from a New Hampshire perspective. Rather, the active through movements demonstrate that the main line rail connections are viable and, in a manner similar to the interstate highways, connections for the state's branch lines should be available and reliable for the foreseeable future.

Figure 3-4: 2009 NH Freight Rail Traffic by Commodity/Direction (percent carloads)



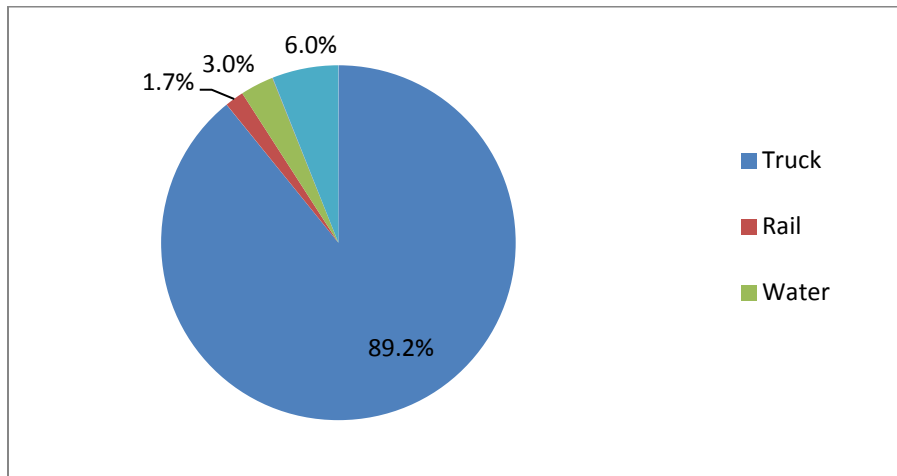
Inbound shipments, at 18 percent of total rail shipments in the state, are the second largest category. Within the inbound group, coal and petroleum products, at 14 percent of the total movements, accounts for the majority of inbound freight rail tonnage. The largest outbound movement, at 2 percent, is made up of the commodity categorized as sand, gravel, and aggregate. The remaining 1 percent of rail traffic in New Hampshire was a combination of other commodities moving into, out of, or within the state.



3.2.2 Inbound Freight Flow

In 2009, 24 million tons of freight was transported into the state by all modes. Less than two percent of this inbound freight traveled via rail.³⁵ In contrast, and as shown in Figure 3-5 below, 89.2 percent of the inbound freight traveled by truck and three percent by water.

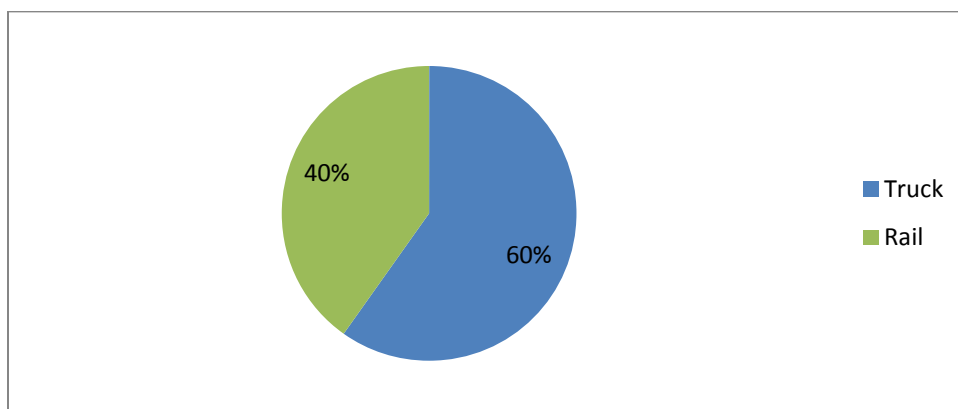
Figure 3-5: NH Inbound Shipments by Weight – 2009



Source: 2009 FAF.

Because of New Hampshire's proximity to Canada, it is important to evaluate the freight flows from that country. Based on FAF data, 40 percent of freight that travels from Canada into New Hampshire is by rail. This represents nearly 50,000 tons of freight. The relatively high reliance on rail for Canadian imports is a result of the type of freight being received from Canada. Much of the imports are heavy commodities, such as clay, concrete, lumber and energy products such as propane, and since they are also shipped long distances those movements are best made by rail. Trucks transport 74,000 tons, or 60 percent, of all freight from Canada into the state (see Figure 3-6).

Figure 3-6: Imports from Canada to NH by Mode Based on Weight – 2009



Source: 2009 FAF.

³⁵ 2009 FAF.



When modes and origins are combined, gasoline comprises the largest share of all freight transported into the state. According to FAF data, nearly 7 million tons of gasoline moved into New Hampshire in 2009. It is important to note that if rail was not available, then the movement of most or all of the gasoline transported by rail would be moved over the highway system. Other top commodities include fuel oils, nonmetallic minerals, and coal- not elsewhere classified (n.e.c.),³⁶ as shown in Table 3-1.

Table 3-1: NH Top 10 Inbound Commodities Based on Weight – All Modes

Rank	Commodity	(thousand tons)
1	Gasoline	6,892
2	Fuel oils	2,217
3	Nonmetal min. prods.	1,977
4	Coal-n.e.c.	1,699
5	Cereal grains	1,464
6	Other ag prods.	1,133
7	Wood prods.	913
8	Basic chemicals	803
9	Mixed freight	789
10	Other foodstuffs	753

Source: 2009 FAF.

When evaluated based on freight value, electronics are the top commodity coming into the state. Gasoline is also highly ranked, in terms of value. Both of these commodities are valued at more than \$4 billion. Other top commodities include machinery; textiles/leather; and miscellaneous manufacturing products.

Table 3-2: NH Top 10 Inbound Commodities Based on Value (\$millions) – All Modes

Rank	Commodity	(\$millions)
1	Electronics	\$4,334
2	Gasoline	\$4,292
3	Mixed freight	\$3,155
4	Textiles/leather	\$2,559
5	Misc. mfg. prods.	\$1,955
6	Other foodstuffs	\$1,567
7	Machinery	\$1,496
8	Fuel oils	\$1,354
9	Plastics/rubber	\$1,239
10	Chemical prods.	\$1,129

Source: 2009 FAF

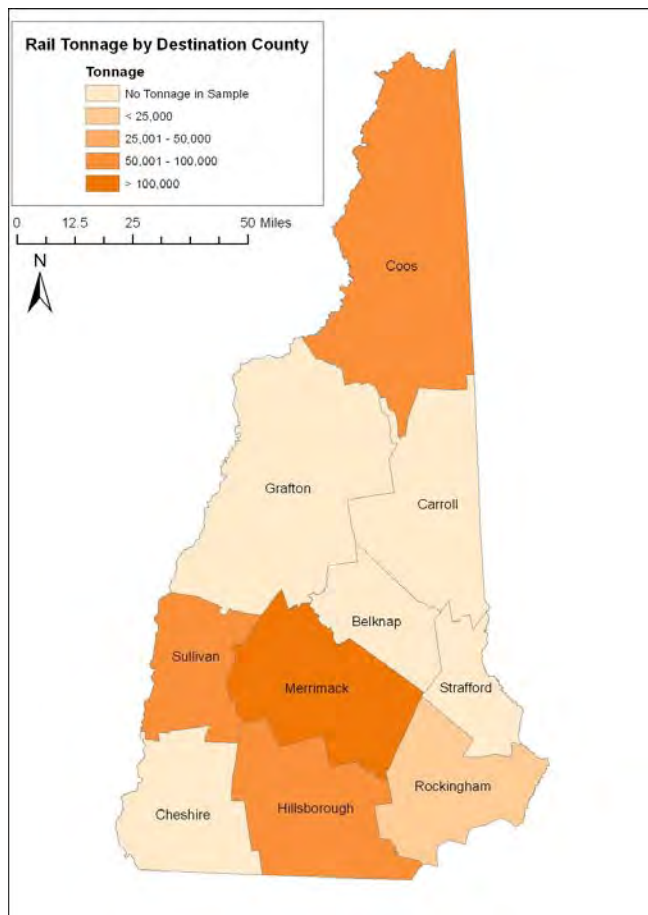
³⁶ Per Commodity Flow Survey, "coal, n.e.c.", refers to lubricating oils and greases; kerosene; other refined petroleum oils and oils obtained from bituminous minerals; liquefied natural gas; propane, liquefied; butane, liquefied; other liquefied gaseous hydrocarbons; gaseous hydrocarbons in a gaseous state; coke and semi-coke of coal, lignite, or peat, and retort carbon; petroleum coke, including calcined petroleum asphalt; asphaltic mixtures based on natural asphalt, natural bitumen, petroleum asphalt, mineral tar, or mineral-tar pitch, and tarred macadam; other coal products and products of petroleum refining, and natural asphaltic minerals.



Inbound Freight Rail Flow

A depiction of rail tonnage, by destination county in the state, is provided in Figure 3-7. Merrimack County receives more tonnage via rail than any other county in the state. More than 750,000 tons of freight was shipped via rail to Merrimack County in 2009. Coos and Hillsborough Counties received over 50,000 and 75,000 tons, respectively, of freight via rail, as shown below. Rockingham County and Sullivan County receive less than 15,000 tons year each. There was no record of inbound freight rail flows of the remaining counties included in the STB Waybill Sample.

Figure 3-7: Rail Tonnage by Destination County in NH – 2009



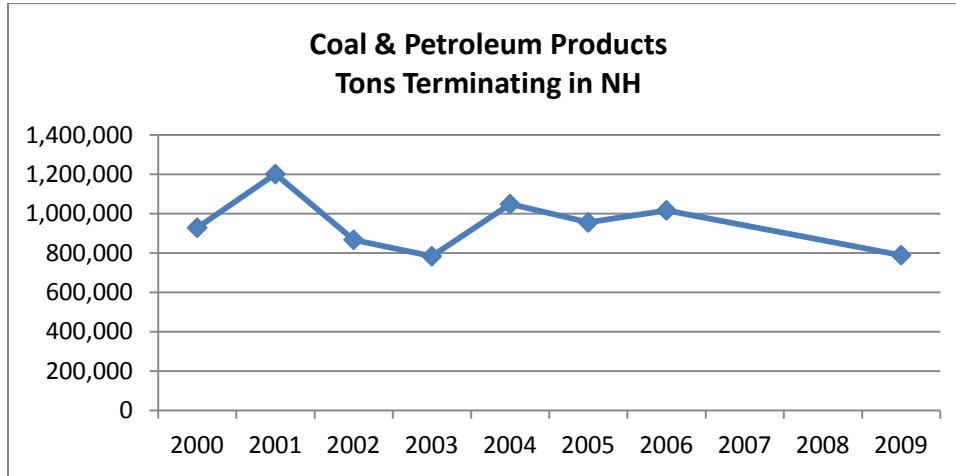
Source: 2009 Waybill Sample.

Based on available data and ranked by weight, coal represents the largest share of rail-transported inbound freight, at nearly 75 percent. Most of this coal is delivered to the Public Service of New Hampshire (PSNH) facility at Bow. The plant has capacity to burn a maximum of 1.6 million tons of coal per year at its Merrimack Station facility, which provides some indication of potential demand for coal by the utility.³⁷ As shown in Figure 3-8, coal volumes have remained generally stable over the past decade.

³⁷New Hampshire Sierra Club.



Figure 3-8: Coal and Petroleum Products – Tons Terminating in NH



Source: AAR.

Hillsborough and Coos County receive a significant share of the remaining freight transported by rail. More than half of the freight delivered to Hillsborough County is clay, concrete and glass products coming from Canada. Chemicals, nonmetallic minerals, food and miscellaneous products are also transported to Hillsborough County via rail. Pulp, paper, allied products and petroleum/coal products are transported to Coos County, again primarily from Canada.

Sullivan and Rockingham County receive the remaining freight, shipped from a more diverse set of origins. The freight is primarily lumber and wood products, though some food and petroleum/coal products are also shipped to these counties via rail.

While the share of inbound freight transported by rail may seem relatively small, it represents tens of thousands of trucks³⁸ that are not using the state's highways. This is significant when one considers the levels of traffic congestion on some of the state's highways at different times of the day and year. For example, both Interstates 95 and 93 experience significant traffic congestion. The railroads that operate lines in these regions already provide service to the businesses along the highway corridors. The expansion of rail service in the region could potentially reduce the volume of current and future truck traffic on corridor highways that would have the added benefit of reducing costs for highway maintenance.

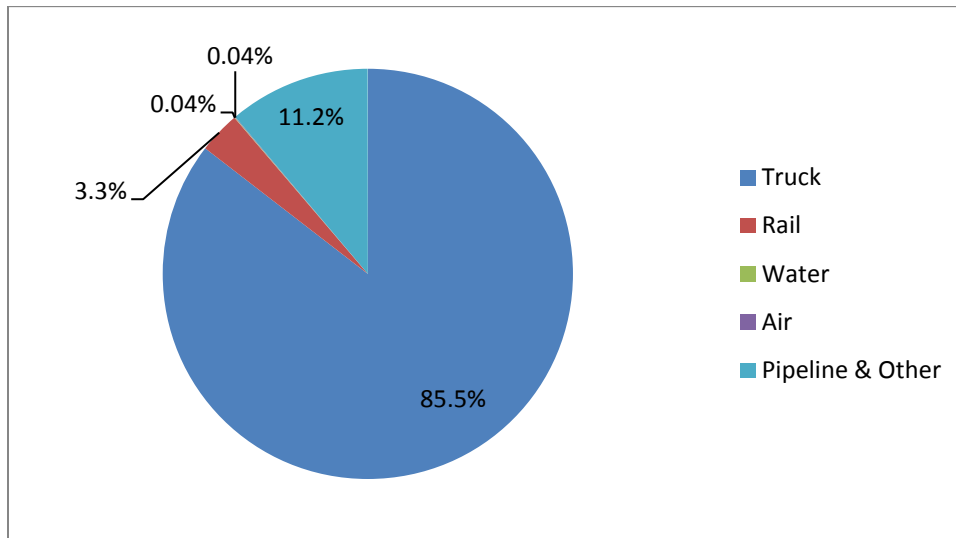
3.2.3 Outbound Freight Flow

According to the Freight Analysis Framework, about 13 million tons of freight originated in New Hampshire in 2009. The rail share of originating outbound traffic is 3.3 percent as shown in Figure 3-9. Movement by truck accounts for 85.5 percent of the outbound tons shipped.

³⁸ This estimate assumes that one truck carries an average of 15 tons of freight.



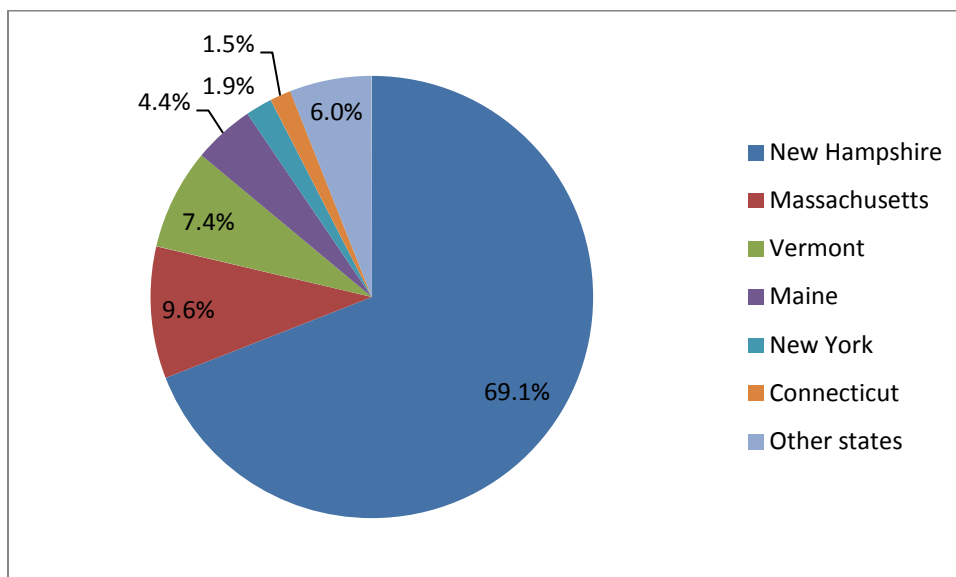
Figure 3-9: NH Outbound Shipments by Weight – 2009



Source: 2009 FAF.

The modal split of shipments originated in New Hampshire can be partially explained by considering that a majority of freight originating in New Hampshire travels less than 50 miles. Rail is typically not a viable mode for movements less than 50 miles. Based on 2007 Commodity Flow Survey data, 76.7 percent of all domestic shipments originating in New Hampshire travel less than 50 miles and nearly 88 percent travel less than 100 miles. Based on the high percent of trips of less than 50 and 100 miles, it is logical that 69 percent of freight traffic originating in New Hampshire stays within the state, while 31 percent is shipped to other destinations in other states.

Figure 3-10: NH Outbound Shipment Destinations – All Modes by Weight

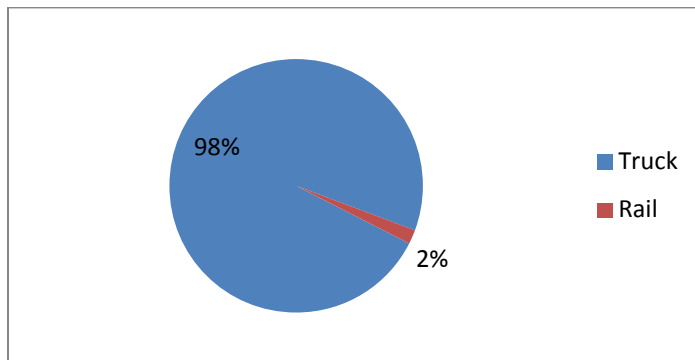


Source: 2007 Commodity Flow Survey.



Freight exported from New Hampshire to Canada is overwhelmingly shipped by truck, as shown in Figure 3-11. This is due to the fact that New Hampshire exported material is not conducive to railroad transportation. Only two percent of all exports from New Hampshire to Canada are transported by rail, which is dramatically different than the 40 percent rail mode share for Canadian imports.

Figure 3-11: Exports to Canada from NH by Mode Based on Weight – 2009



Source: 2009 FAF.

The top 10 outbound commodities are presented in Table 3-3 below. Coal -not elsewhere classified (n.e.c.)³⁹, is the top commodity originating in New Hampshire for combined modes and destinations. It accounts for 2.8 million tons of the total freight shipped in the state. This commodity category includes some lubricating oils and greases, kerosene, liquefied natural gas and liquefied propane, asphalt, as well as other types of products.⁴⁰ Nonmetallic mineral products are the next most highly ranked commodity, accounting for 1.2 million tons.

Table 3-3: NH Top 10 Outbound Commodities Based on Weight (thousands of tons) – All Modes

Rank	Commodity	(thousand tons)
1	Coal-n.e.c.	2,772
2	Nonmetal min. prods.	1,194
3	Wood prods.	1,007
4	Other foodstuffs	769
5	Gravel	727
6	Waste/scrap	697
7	Alcoholic beverages	615
8	Fuel oils	605
9	Mixed freight	570
10	Coal	516

Source: 2009 FAF.

³⁹ See definition of Coal n.e.c. in footnote on page 77

⁴⁰ http://www.bts.gov/publications/commodity_flow_survey/survey_materials/pdf/sctg_booklet.pdf



When ranked based on value, the top outbound commodity for New Hampshire is electronics, representing \$5.8 billion in value. Other top commodities include textiles/leather; machinery; miscellaneous manufacturing products; and precision instruments, as shown in Table 3-4 below.

Table 3-4: NH Top 10 Outbound Commodities Based on Value (\$millions) – All Modes

Rank	Commodity	(\$millions)
1	Electronics	\$5,822
2	Textiles/leather	\$3,626
3	Misc. mfg. prods.	\$2,149
4	Precision instruments	\$2,007
5	Mixed freight	\$1,763
6	Machinery	\$1,763
7	Plastics/rubber	\$1,432
8	Other foodstuffs	\$1,181
9	Base metals	\$869
10	Coal-n.e.c.	\$858

Source: 2009 EAF.

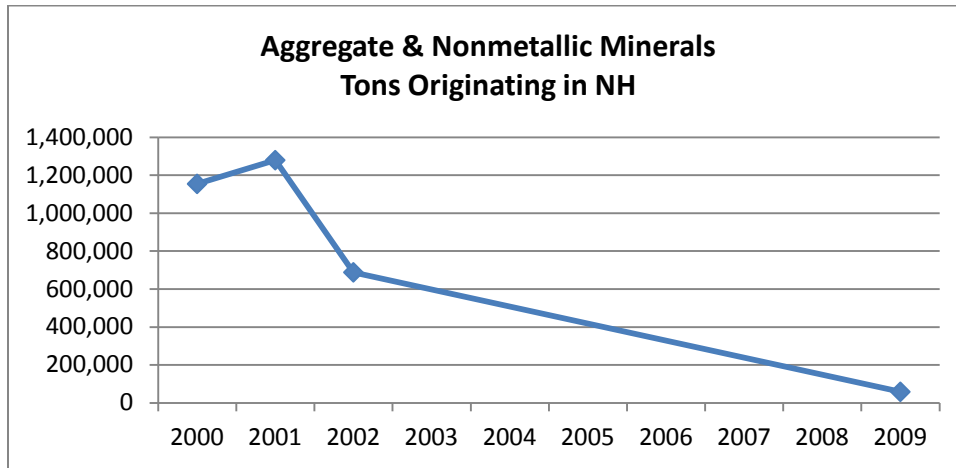
Outbound Freight Rail Flow

The outbound freight shipped by rail is less diverse than the inbound shipments. Approximately 75 percent of the freight rail shipped out of the state is nonmetallic minerals originating in Strafford County; much of this is sand, stone and lightweight aggregate transported from New Hampshire to Charlestown, Massachusetts.⁴¹ Figure 3-12 shows tons of aggregate and nonmetallic minerals originating in New Hampshire and shipped by rail. As shown in the figure, 2001 was the peak for the shipment of these commodities. This coincides with Boston's Central Artery/Tunnel project that used substantial amounts of concrete. The decline since then is due to the completion of the project in Boston and, more recently, the overall sluggish economy.

⁴¹ New Hampshire Northcoast Railroad Improvements, TIGER II application, NHDOT, <http://www.nh.gov/dot/org/aerorailtransit/railandtransit/projects.htm>



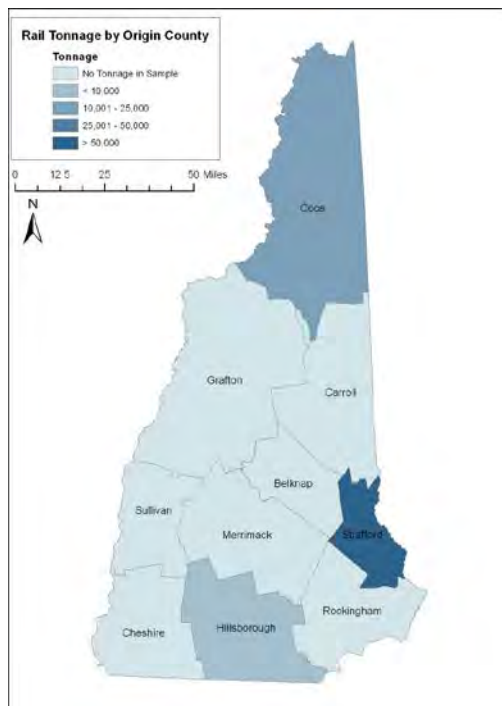
Figure 3-12: Aggregate and Nonmetallic Minerals – Tons Originating in NH



Source: AAR.

The remainder of the outbound freight transported by rail in the state is comprised of pulp, paper or allied products; petroleum or coal products; and miscellaneous freight shipments coming out of Hillsborough or Coos Counties generally being shipped to the Midwest or other New England states. Outbound rail volumes from most other counties are not high enough to be included in the Waybill Sample data, as shown in Figure 3-13.

Figure 3-13: Rail Tonnage by Origin County in NH



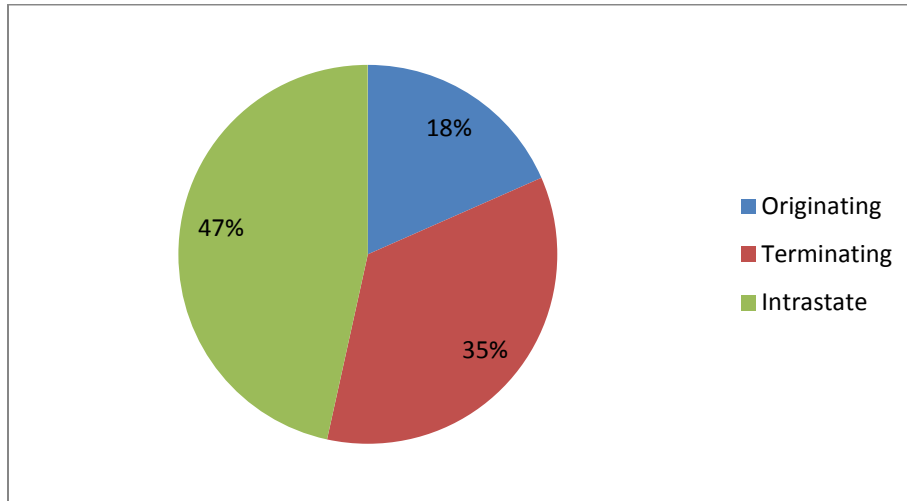
Source: 2009 Waybill Sample.



3.2.4 Intrastate Freight Flow

In New Hampshire, originating truck shipments account for 18 percent of freight tonnage, while terminating shipments represent 35 percent. Intrastate shipments account for 47 percent of all freight, based on weight. The state's relatively small size and the tendency of trucks to transport cargo short distances helps to explain that nearly half of all truck traffic in New Hampshire is traveling within the state as shown in Figure 3-14.

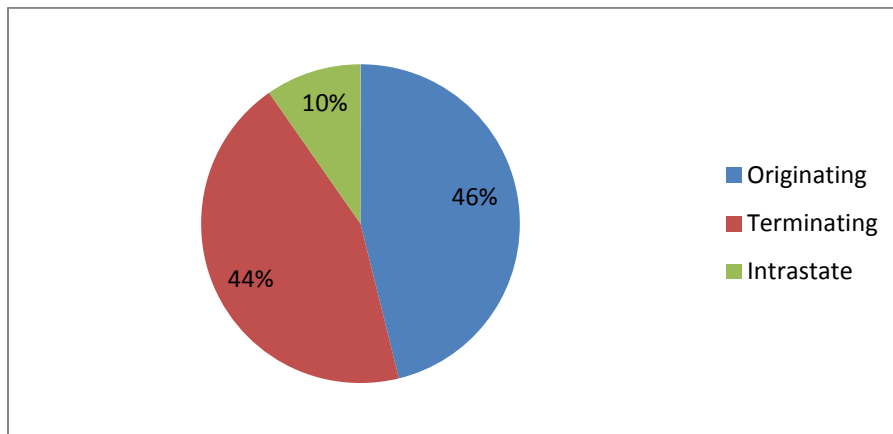
Figure 3-14: NH Truck Shipments by Direction (Tons) – 2009



Source: 2009 FAF.

With respect to rail, inbound and outbound freight are more evenly split. When excluding all through movements, rail shipments originating in the state account for 46 percent of rail shipments and terminating traffic accounts for 44 percent (Figure 3-15). Intrastate traffic accounts for only ten percent and is made up primarily of sand, gravel and aggregate and coal products. Shipment by rail within the state is often not competitive, given the state's relatively small size and rail's greater efficiency and cost competitiveness in shipping longer distances.

Figure 3-15: NH Rail Shipments by Direction (Tons) – 2009



Source: 2009 FAF.



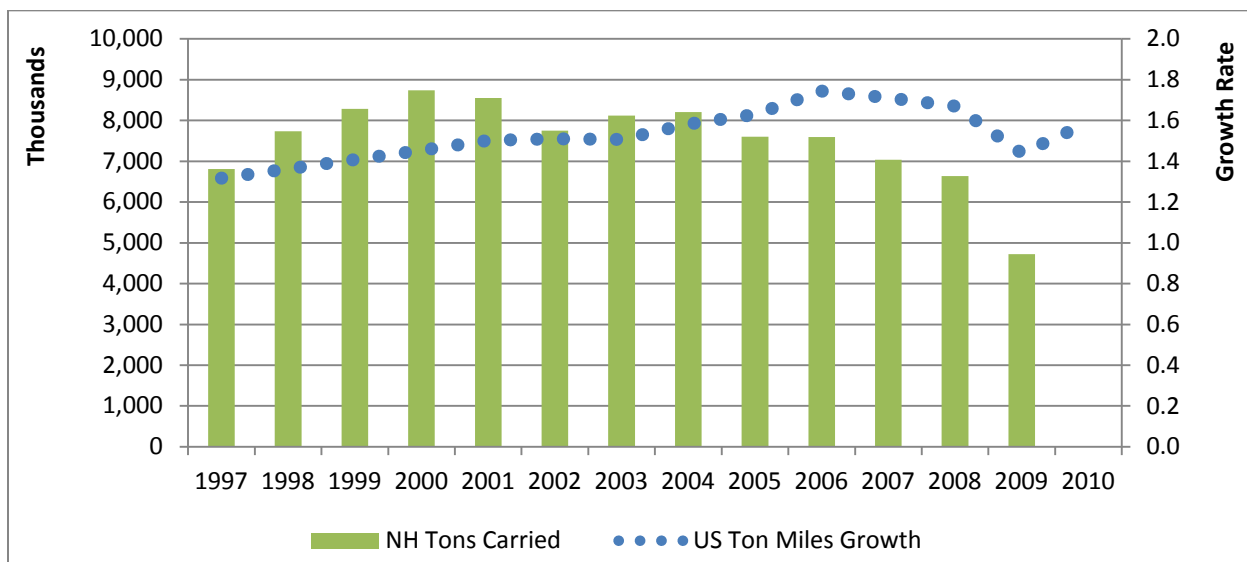
3.3 Freight Rail Trends for New Hampshire

The chapter sections above have been focused on the analysis of recent data relative to the existing rail operations for New Hampshire. This section provides information on historical trends and projections for future conditions.

As noted in previous sections related to Freight Analysis Framework (FAF) forecasts and the New Hampshire Mode Share Index Based on Weight, rail tonnage in the state is expected to grow significantly in the next 30 years. As shown below, 2000 was the peak year for New Hampshire rail tons carried from 1997 to 2009. In 2000 there were more than 8.7 million tons transported into, out of, and through the state. The 2007 FAF projected a 50 percent increase in total nationwide freight traffic over by 2040. This projected growth of all freight traffic also translated to a projected increase in rail freight traffic. Since that time, considerable changes have occurred in the national and global economies that are likely to change the next set of freight volume projections due out next year.

Contrary to the projections of future increases in rail traffic, recent trends for New Hampshire, which are presented in Figure 3-16, indicate that rail volumes in the state have decreased 46 percent between 2000 and 2009. In contrast, US rail volume has grown 10.9 percent over the same period. While the reduction in rail traffic from 2007 to 2009 can be attributed in large part to the general economy, it should be noted that compared to the national trends, New Hampshire rail traffic has been in a decline since 2000. To understand the reasons for the decline in New Hampshire major rail transported commodities were evaluated.

Figure 3-16: NH Tons Carried and US Ton Growth 1997 to 2009

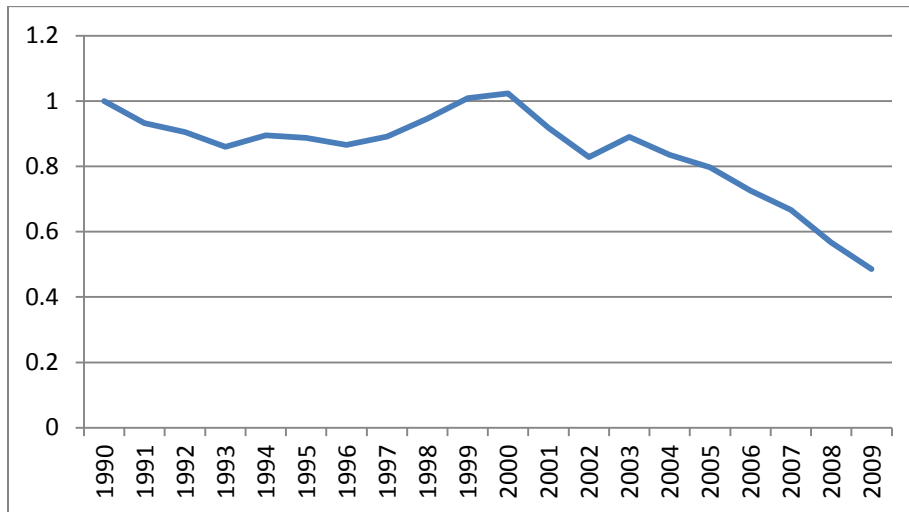


Source: American Association of Railroads.

Based on commodity data there is a correlation with recent industry-specific conditions within the state. For example, the pulp and paper industry, historically very dependent on rail transportation, has reduced in size in the state. Figure 3-17 illustrates the reduced paper industry presence in the state. With the exception of a few upturns in the late 1990s, gross domestic product for the state paper industry has generally decreased since 1990. From 2000 to 2009, paper industry GDP in the state has decreased 75 percent.



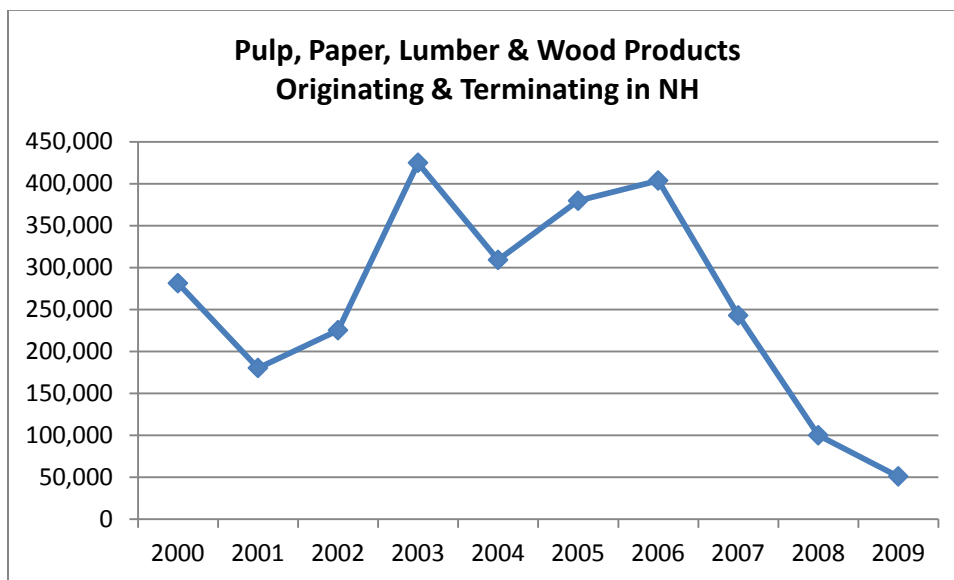
Figure 3-17: NH Paper Industry GDP Index 1990 through 2008



Source: Bureau of Economic Analysis, Gross Domestic Product by State.

While not all paper products and raw materials are transported by rail, many are, such as rolled paper, pulp and lumber. Figure 3-18 shows the originating and terminating pulp, paper, lumber and wood products tonnage since 2000. As shown in the figure, 2003 was the peak tonnage for this commodity group. The paper industry's decline since then has led to reduced tonnage shipped by rail in the state.

Figure 3-18: Pulp, Paper, Lumber and Wood Products Originating and Terminating in NH



Source: AAR.



Another significant commodity handled by rail is coal and petroleum products. Based on available data and ranked by weight, at nearly 75 percent, coal represents the largest share of rail-transported inbound freight. As discussed in a previous section, most coal is delivered to the PSNH Bow power plant. During the past decade coal volumes have remained generally stable.

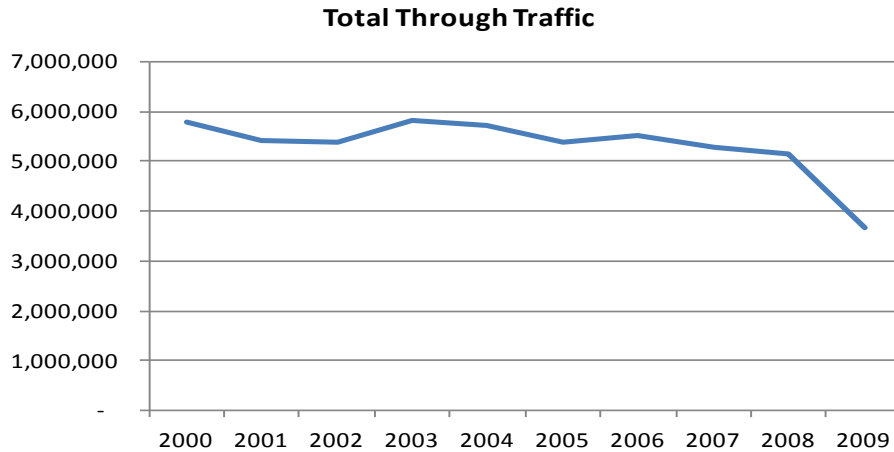
Contrary to common perception, only a portion of the coal shipped to the PSNH plant is delivered by rail. Approximately 50 percent of delivered coal is low sulfur coal transported by truck from Portsmouth where it is received via ship. The delivery method of all coal is established by a PSNH supplier. The coal supply contract, which includes freight costs, highlights that there is the possibility to increase or decrease the amount of coal delivered by rail to the Bow plant. Additionally, future projections for coal-based rail volumes in the state may be influenced by the long term viability of the Bow plant to continue to utilize coal.

Changes outside of New Hampshire can influence the way commodities are moved through the state. Crude oil from the North Dakota and Saskatchewan area is now being shipped to refineries across North America. With the sudden surge in crude production due to advances in drilling technology, pipeline construction has not kept pace with demand. Oil production from this area has increased from 3,000 barrels a day in 2005 to 225,000 in 2010, and is projected to increase to 350,000 barrels a day by 2035 according to the Energy Information Administration. In lieu of pipeline capacity, railroads are being used to ship the crude oil to refineries. CN has begun to move crude from Saskatchewan to Albany, NY where it is loaded on barges for the trip down the Hudson through New York and onto east coast refineries. Shipments like these are also being made through New Hampshire. In June 2012 it was reported that a unit crude oil train traveled along the Pan Am mainline enroute to a refinery in New Brunswick. Changes such as this one can dramatically change the volumes and types of commodities that are shipped via rail in New Hampshire.

The other major commodity transported by rail in the state is aggregate (i.e. sand, gravel, crushed stone, etc.). The trends in aggregate moved in the state are shown in Figure 3-12. Most of the aggregate shipped by rail is generated in Ossipee and is moved to Boston for use in making of concrete. This industry is subject to changes in the level of construction that typically follows the general economy. Thus the current economic down turn can be viewed as the reason for the recent reduction in movement of aggregates. For New Hampshire, shipments of aggregate to Boston for the Boston Central Artery/Tunnel project, also known as the Big Dig, was a significant freight movement that peaked in 2001. Since the volume of construction occurring in Boston with the Big Dig project is not likely repeated in the near future, the volumes achieved in 2001 are not expected to be achieved in the future, even though it is expected that volumes of aggregate moved by rail will increase from the 2009 volumes.



Figure 3-19: Total Through Traffic in NH



Source: AAR

In addition to the analysis of the commodities handled within the state, the other major consideration is the trend in through traffic. As shown in Figure 3-19, total through traffic has remained relatively stable with the exception of the downturn in 2009 that reflects the general downturn in the economy. During discussions with rail operators of through routes, it was noted that traffic levels have been increasing since the 2009 and there is capacity to increase rail movements. The trends in through traffic are viewed as a positive sign for the future of the rail system in New Hampshire.



4. ECONOMIC AND ENVIRONMENTAL IMPACTS

New Hampshire relies heavily on the transportation system to support its economy, and the rail system is one element of this overall transportation infrastructure. A significant component of the Rail Plan is to provide an understanding of the benefits of rail to the state. Benefits from the rail system are realized through both freight and passenger operations. The conclusion that freight and passenger rail positively contribute to the state’s economy is reached through the review of data and discussions with rail system stakeholders. The primary economic benefits are realized through the jobs and related spending that is generated from rail-dependent businesses in the state. Rail service provides substantial secondary benefits, such as reduction of highway congestion and improvements in air quality.

The economic and environmental impacts of rail for New Hampshire were analyzed for both freight and passenger rail operations. The following sections provide specific detail regarding the impacts and benefits of the rail system in New Hampshire.

4.1 Economic Impacts of Rail to New Hampshire

The 2009 state Gross Domestic Product (GDP) in New Hampshire was \$59.1 billion. As shown in Table 4-1, the transportation and warehousing industry in the New Hampshire contributed \$871 million to the GDP, which is 1.5 percent of the total state GDP. This relative share is similar to the southern New England states of Massachusetts, Connecticut and Rhode Island.

Table 4-1: 2009 Gross Domestic Product

State	Transp. & Warehousing (excl. Post Office) - Share of Statewide GDP	Transportation & Warehousing (excl. Post Office) GDP	Total GDP (\$millions)
New Hampshire	1.5%	\$871	\$59,086
Vermont	2.0%	\$499	\$24,625
Maine	2.3%	\$1,158	\$50,039
Massachusetts	1.6%	\$5,736	\$360,538
Connecticut	1.5%	\$3,428	\$227,550
Rhode Island	1.5%	\$690	\$47,470

Source: Bureau of Economic Analysis, 2009 GDP by State.

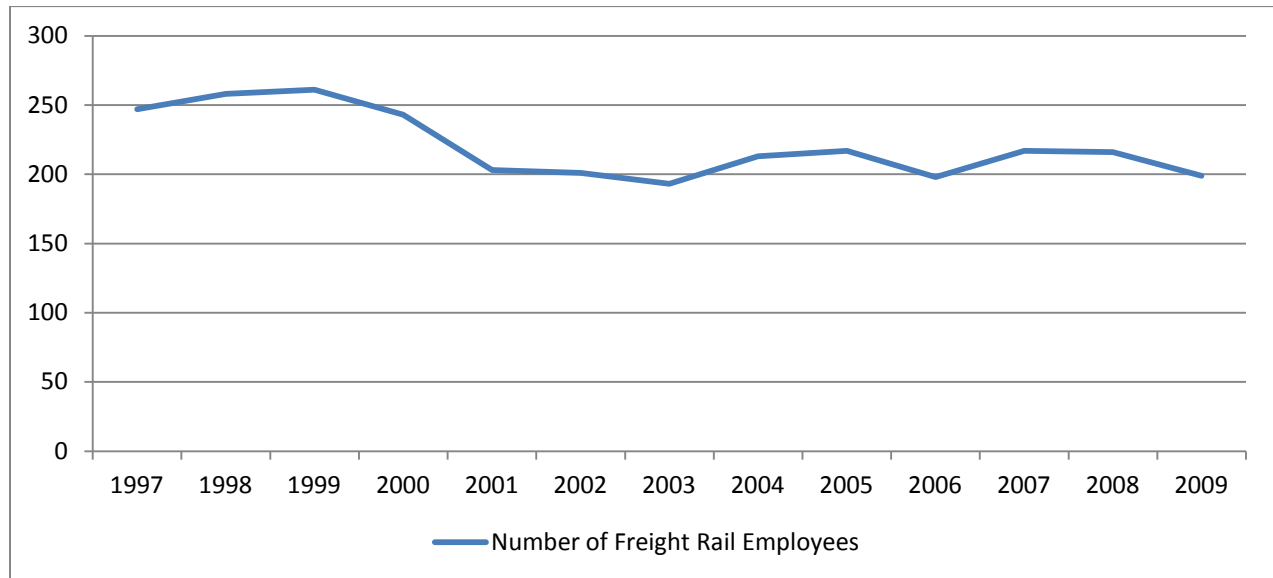
A comparison with the State of Maine, where transportation and warehousing account for 2.3 percent of GDP, reveals that since Maine has a higher percent of manufacturing and freight-dependent industries such as paper and agriculture, transportation is a more important sector of its economy. This difference is reflective of the downturn in New Hampshire heavy manufacturing as noted in the previous chapter. This does not mean that transportation and freight rail service is not important to the state’s economy. In addition to contributing to the state’s GDP, the transportation industry affects the state and regional economies in other ways:

- According to the US Bureau of Labor Statistics, freight dependent New Hampshire industries directly employ more than 245,000 people,
- Rail shipping is estimated to support 17,000 of those jobs, and these directly rail-supported jobs indirectly support other jobs in New Hampshire, and
- New Hampshire freight and passenger railroads directly employ 200 to 250 people.



As shown in Figure 4-1 below, freight rail employment peaked in 1999 with 261 employees and has generally been steady with approximately 200 direct freight rail jobs in New Hampshire each year since 2001.

Figure 4-1: Freight Railroad Employment in NH 1997 through 2009



Source: American Association of Railroads

These direct jobs may generate induced and indirect jobs as well. It is estimated that each direct job in the freight rail industry supports another 4.5 jobs, equating to the potential for an additional 895 freight-rail-related jobs elsewhere in the economy.⁴² Most of these employees reside in the state, where they make purchases and contribute to the local tax base.

Rail-Dependent Businesses

Businesses that utilize the freight railroads also provide jobs and wages to New Hampshire residents. These businesses tend to move bulk commodities and specialty products and chemicals, which are well suited to rail transport, and many support manufacturing jobs in the state.

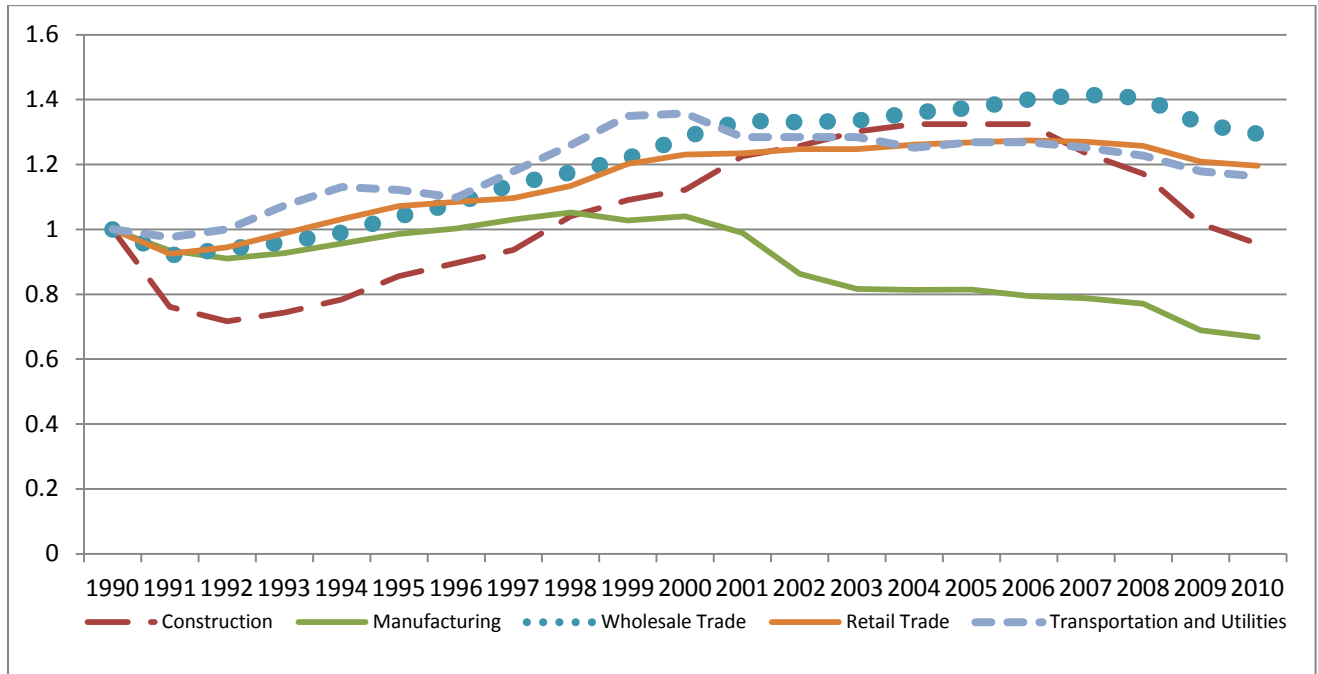
Annual employment in industries that are often freight-dependent is shown in Figure 4-2. While these industries have experienced employment decreases since 2006, they still employ more than 337,000 people in New Hampshire.⁴³

⁴² American Association of Railroads, "American Freight Railroads, Supporting American Jobs, Moving the American Economy", December 2009

⁴³ Bureau of Labor Statistics, 2010.



Figure 4-2: Freight-Dependent Employment Index 1990 through 2010



Source: Bureau of Labor Statistics, Employment by Industry

Businesses in these freight-dependent industries employ New Hampshire residents, paying wages that can be used to purchase goods and services across the state.

For example, propane retailers often utilize freight rail services. A New Hampshire propane retailer that directly employs 90 people is estimated to generate 86 indirect jobs across the country. This is because the retailer requires supplies and services from other businesses in order to serve its customers. In turn, those supporting businesses hire employees. In addition to these indirect effects, 118 induced jobs are also generated from subsequent rounds of spending by these employees when they purchase groceries, gasoline, and other items.

Overall, a single New Hampshire propane retailer may generate 294 jobs, many of which go to residents of the state, and \$17.7 million in labor income. This same retailer earns \$2.5 to \$5 million in revenue annually, which contributes to state revenues through business taxes. The retailer is also a property owner contributing to the local property tax base.

Other rail dependent businesses provide similar benefits to the state and national economies. A paper manufacturer in New Hampshire that employs 58 people earning \$6 million in labor income for New Hampshire residents is estimated to support an additional 182 jobs in New Hampshire and nationally, due to indirect and induced effects.

Freight-dependent businesses are located across New Hampshire, as shown in the map in Figure 4-3 which shows where existing or former rail served business are located in the state based on the presence of railroad sidings, and many of these are dependent upon the state's freight rail system.



Figure 4-3: Freight Dependent Businesses in NH



It is easy to assume that for rail dependent businesses, trucking is an available alternative. While this is true for some New Hampshire shippers, it is not the case for all. Rail provides a cost-effective means of transport, especially for heavy and bulky products. While switching to truck may be technically possible in some cases, it is likely to increase transportation costs. For these businesses, maintenance of the existing freight rail infrastructure is critical.

Some rail shippers could switch to truck transport if freight rail became too unreliable or even unavailable, but it is likely that their transportation costs would be higher. This will become an even greater consideration if fuel costs continue to rise, as they have been recently, since fuel costs impact operational costs for trucking more than for rail. While some rail shippers may be able to divert to truck, any increase in transportation costs would likely be passed on to New Hampshire consumers and businesses.



Even without expanding the number of rail-dependent businesses, the ramifications of not maintaining the existing freight rail system are significant. In addition to the employees who would lose their jobs if a shipper or railroad closed its doors, the revenue generated by these businesses would also disappear. This would have implications not only on the private sector but also the public sector, which relies on business taxes to fund state-provided services and property taxes to support local public services. With fiscal resources tightly constrained, the elimination of this tax revenue source is an important consideration to policy makers.

Avoided Maintenance Costs

Because freight rail does not depend upon the state's roadways, these businesses help lessen highway wear and tear. Building and maintaining highways is expensive, and highway construction and maintenance costs continue to escalate. It can cost \$15 million or more, and well over a decade, to add a lane to a mile of highway. Comparatively, it costs approximately \$2 million to \$4 million and relatively little time for rehabilitation of a typical mile of rail line that can add capacity, efficiency, and reliability. It is also worth noting that unlike trucks, barges and airlines, America's freight railroads operate almost exclusively on infrastructure that they build, maintain and finance using their own private funding.

Regional Connections

Because freight rail is typically shipped over longer distances, the level of service in New Hampshire depends on the infrastructure and service in other states and Canada to be effective. There are virtually no internal freight rail shipments in New Hampshire; nearly all freight rail movements originate, terminate or travel through the state. As a result, regional rail connectivity is critical to promoting the efficient operations of New Hampshire's rail system because it integrates it into the national and international rail system.

A number of New England states are making efforts to maintain or expand their existing rail infrastructure. This is a positive trend for New Hampshire since the regional rail system is interconnected. Similarly, the existing rail infrastructure in New Hampshire must be maintained, or the state risks losing existing and new businesses that depend on the cost-effective shipping advantage of freight rail.

4.1.1 Passenger Rail

Passenger rail service is attractive and beneficial to New Hampshire for a number of reasons. Over the past three years, almost 45 percent of Amtrak Downeaster ridership has come from the New Hampshire stations in Exeter, Durham and Dover. Passenger rail service has multiple benefits that include: providing improved access to jobs for employees, enhancement of access to key destinations and attractions; support of the state tourism industry; and offering an alternative to driving.

Passenger rail is generally supported in the state, according to a poll conducted in early 2011. The survey found that more than 75 percent of New Hampshire residents surveyed strongly or generally favored the proposed New Hampshire Capitol Corridor project, which would extend passenger rail service from Boston and Lowell into New Hampshire through Nashua, Manchester and Concord. Six percent opposed or strongly opposed it, and 19 percent were neutral or were not familiar enough with the project to comment.⁴⁴

2011 Survey Question: Do you favor or oppose extending commuter rail service into this corridor [Capitol Corridor] in New Hampshire or do you not have an opinion on this?

⁴⁴ *Granite State Poll for New Hampshire Rail Transit Authority*, prepared by Chad S. Novak and Andrew E. Smith, Ph.D., University of New Hampshire Survey Center, February 2011.



The following sections describe the benefits of passenger rail services in greater detail.

Employee Recruitment

National data suggests that passenger rail is an important tool to economic growth. This viewpoint was reiterated during a series of interviews held with businesses and economic development professionals during Rail Plan development. Although several passenger rail benefits were discussed during the interviews, New Hampshire's development professionals focused on the importance of connecting employers and employees. Household transportation options and mobility are enhanced with passenger rail through improved access to jobs.

Several of the stakeholders interviewed cited examples of how passenger rail is connecting jobs and business. For many New Hampshire residents, the Amtrak Downeaster service operates as a commuter service. Surveys conducted by the University of New Hampshire indicate that faculty use the train to commute to the university. Residents of the state also use the existing Downeaster service to commute to the Boston area for their jobs. In Exeter, which provides nearly half of the state's ridership on this train, the parking lot is over capacity on a daily basis.

In addition to highlighting uses of the existing passenger rail service today, development professionals in the state discussed the reverse commute opportunities that could become available if service between New Hampshire and metropolitan Boston were expanded. During the interviews, stakeholders indicated that some businesses in the state, particularly in southern New Hampshire, have employment available but lack the labor required to fill those job vacancies. These stakeholders indicate that employee recruitment efforts would be enhanced with improved or expanded passenger rail service.

Employees could live in greater Boston but work in New Hampshire and help the state's businesses continue their expansion plans. In addition to filling a labor vacancy in the state, these reverse commuters would likely make purchases in New Hampshire during their working hours, contributing to the state's economy. Additionally, they may consider moving to the state in the longer term for lifestyle or other reasons.

Congestion Avoidance

Passenger rail service can provide advantages over the automobile through congestion avoidance. Many New Hampshire commuters experience congestion along the region's highways that could be avoided by train travel. For example, based on information from a Texas Transportation Institute's national study of congested corridors, New Hampshire residents commuting to Boston via car or bus experience the following delays due to congestion:

- Travel between New Hampshire locations and I-95 (Route 128) can take 40 percent longer during peak commuting hours,
- Travel times from I-95 (Route 128) and downtown Boston can be 100 percent longer during peak periods, and
- At least once a month, a New Hampshire to Boston highway commuter can expect a commute that is nearly four times as long as during non peak periods

Student Recruitment

Colleges and universities have found the option of public transportation a selling point to potential students. The University of New Hampshire (UNH) in Durham actively promotes the connectivity provided by the Amtrak Downeaster and intercity bus services.

The Downeaster service connects Durham to Boston and Portland, ME, with other stops along the line. It is used by students to access Logan Airport through transfers to the MBTA system or taxi. In surveys



conducted by UNH, the amenities offered on the train, such as internet access, were also highlighted as reasons for using the service. Students, faculty and staff are frequent users of the train and, increasingly, students note that they chose UNH over peer institutions because of its intercity rail and bus access. Half of the passengers from the Durham station are affiliated with UNH.⁴⁵

Philips Exeter Academy, a boarding school located within walking distance of the Exeter train station, also promotes the Downeaster service on its website. Day students use the Downeaster to commute. Students also take the Downeaster for day trips to Boston. According to the Northern New England Passenger Rail Authority (NNEPRA), approximately 16 percent of all Downeaster riders are students.

During interviews, economic development professionals indicated that the availability of passenger rail service near educational institutions is highly desirable. They would welcome the expansion of passenger service to better connect students and the state's colleges and universities.

Economic Development

Passenger rail in New Hampshire can enhance property values near stations and support downtown revitalization. It is well-documented in case studies that passenger rail stations can serve as nodes of transit-oriented development where people live, work, play and have convenient transit access. Communities across the nation that have access to public transportation have experienced greater demand for commercial floor space and correspondingly higher commercial property values. Residential property values can also increase due to the environmental and location based benefits of transit-oriented development.

Property value premiums near transit lines have been reported in seven urban areas: Philadelphia, Boston, Portland, Oregon, San Diego, Chicago, Dallas and Santa Clara County, California. A 2002 study by Cervero and Duncan noted high premiums for parcels near CalTrans commuter rail stations in Santa Clara County, CA. In Dallas, DART noted that residential land values were 39 percent higher near stations. According to a 2005 Urban Land Institute report,⁴⁶ overall, commuter rail areas held the highest premium on land values of for-sale properties.

Research suggests that at least one quarter of all households that will be looking for housing in the next 20 years will look to rent or to buy housing within a half mile of a transit station.⁴⁷ Seventy-one percent⁴⁸ of older households have expressed interest in living within walking distance of transit. Alternative transportation will be an increasingly important consideration to those with disabilities and to the state's aging population.

In Exeter, redevelopment planning has been spurred by Amtrak's Downeaster service. The area around the station itself has been targeted for development, as has the Alrose Shoe factory building located directly across from the station platform.

Dover has made efforts to spur transit-oriented development around its rail and bus station. In fact, proximity to the rail station is being factored into its economic development plans. For example, there is discussion of a hotel/conference center and parking garage in one of the mill buildings. The Downeaster rail station is very close to the location and the availability of passenger rail service is viewed as an important element to these development plans.

⁴⁵ Information obtained from the University of New Hampshire through Technical Advisory Committee meetings held as part of the NHSRP development.

⁴⁶ *Developing Around Transit*, Urban Land Institute, 2005, Ch 2.

⁴⁷ *Hidden in Plain Sight, Capturing the Demand for Housing near Transit*, Reconnecting America's Center for Transit-Oriented Development, September 2004.

⁴⁸ American Association of Retired Persons, 2004.



Other areas of the state have also considered how expanded passenger service could promote economic development in their communities. The cities of Manchester and Nashua have conducted studies that consider the transit-oriented development opportunities associated with passenger rail service, and specifically a rail station. Private developers have expressed considerable interest in properties located in close proximity to potential rail station sites in these communities.

Other Passenger Rail Benefits

In addition to the benefits described above, public transportation can provide personal mobility to people and save money. The average household spends 18 cents of every dollar on transportation, the largest expenditure after housing. Of this, 94 percent goes to buying, maintaining, and operating cars. Public transportation provides an affordable, and for many, necessary, alternative to driving. In fact, households that use public transportation daily save more than \$8,400 every year.⁴⁹

Like freight rail, passenger rail also supports efforts to preserve the environment. Millions of hours in travel time and millions of gallons of fuel are saved by Americans who live in areas served by public transportation, simply because of avoided congestion. Households near public transit drive an average of 4,400 fewer miles than households with no access to public transit. This equates to an individual household reduction of 223 gallons of gasoline per year.⁵⁰

Tourist Railroads

There are three tourist railroads operating in New Hampshire, with nearly 170,000 annual trips. The adult fares of \$14 to \$48 per person generate several million dollars per year in revenue. In addition to purchasing train tickets, visitors often purchase food and souvenirs. Based on the information collected during the stakeholder interviews, tourist railroads in New Hampshire generate an additional \$8 to \$10 per passenger in tourism dollars, equivalent to more than \$3.5 million per year. In addition, these tourists will spend at other locations in the state, contributing to the one of the most important industries for the state's economy. Tourists and travelers bring in \$3.9 billion to the state's economy through direct spending, supporting more than 60,000 full and part-time jobs. The contribution of tourist railroads to this important industry for the New Hampshire should not be overlooked. Additional information related to the New Hampshire tourist economy is included in Section 5.2.2, Passenger Rail Trends.

4.2 Environmental Impacts of Rail in New Hampshire

4.2.1 Transportation/Congestion

There are numerous advantages of moving freight by rail instead of truck, not the least of which is its impact on congestion. A typical freight train can carry the load of 280 or more trucks, thereby creating space on the states highways for 1,100 or more cars.⁵¹ Planning for greater freight movements on railroads along multimodal corridors can reduce the cost of maintaining existing roads and the pressure to build costly new ones. Freight rail avoids additional overcrowding on highways, making roads safer and promoting economic growth.

Three of the four main lines in New Hampshire run generally parallel to the major Interstate Highways.

⁴⁹ APTA, Public Transportation Facts At A Glance, 2008

⁵⁰ APTA, Public Transportation Facts At A Glance, 2008

⁵¹ Association of American Railroads, <http://www.aar.org/InCongress/Energy%20and%20Environment/Energy%20and%20Environment.aspx> December 29, 2009



- Connecticut River Line runs along the I-91 corridor,
- New Hampshire Mainline runs along the I-93 corridor, and
- Main Line-West runs along the I-95 corridor.

These corridors represent multi-modal thoroughfares with the possibility of providing freight movements by rail and truck, and passenger movements by intercity rail, bus and personal vehicles. By facilitating additional movement of freight by rail, instead of trucks, there will be a direct impact on the congestion in these Interstate corridors.

By transporting freight by rail, rather than truck, rail-dependent businesses contribute to reduced highway congestion. In New Hampshire, annual rail tonnage equates to more than 188,000 trucks.

4.2.2 Energy

In 2009, 35 percent of New Hampshire's total energy resources were consumed by transportation⁵². Based on data from the American Association of State Highway and Transportation Officials (AASHTO), for each one percent shift of long-haul freight currently moving by truck to rail, savings could total approximately 111 million gallons of fuel per year and annual greenhouse gas reductions of 1.2 million tons per year.

Rail fuel efficiency is higher than truck fuel efficiency in terms of ton-miles per gallon for all movements.⁵³ Specifically, trains are more than 2.5 times more fuel-efficient than trucks.⁵⁴ According to the Association of American Railroads, in 2010 one gallon of fuel moved one ton of freight by rail an average of 484 miles. This compares to one ton only moving 155 miles on a gallon of fuel if transported by truck. In the past 25 years, freight trains have increased their fuel efficiency by 80 percent.⁵⁵ Because of a train's greater fuel efficiency, shifting just 10 percent of long-haul freight from trucks to rail would reduce fuel consumption in the U.S. by more than one billion gallons a year, reducing reliance on petroleum products and enhancing national security.

The use of rail also reduces the amount of fuel used in the state to move freight. Approximately 4.7 million tons (7.3 %) of freight is transported by rail in the state. As compared to trucks, moving this freight by rail saves 17.4 million gallons or \$66.8 million of fuel annually.

Passenger rail systems consume one-third less energy per passenger-mile than automobiles.⁵⁶ On a per passenger basis, Amtrak operations are 18 percent more energy efficient than airlines and 17 percent more efficient than automobiles. If more traveling passengers and shippers chose rail over other modes, this could result in fuel efficiency gains.

4.2.3 Air Quality

Of all modes of transportation, railroads cause the least air pollution per unit of freight carried. This can reduce the amount of greenhouse gas emissions within the state and improve public health. A train uses

⁵² Percentages in other New England states range from 29 percent in Maine and Rhode Island to 34 percent in Vermont.

⁵³ Federal Railroad Administration Final Report, Comparative Evaluation of Rail and Truck Fuel Efficiency on Competitive Corridors, November 19, 2009.

⁵⁴ A Modal Comparison Of Domestic Freight Transportation Effects On The General Public, Center For Ports And Waterways, Texas Transportation Institute, March 2009

⁵⁵ U.S. Department of Energy, Transportation Energy Data Book: Edition 30 -2011

⁵⁶ U.S. Department of Energy, Transportation Energy Data Book: Edition 30 -2011



up to 70 percent less energy and causes up to 85 percent less air pollution than a jet aircraft, and intercity trains provide similar benefits to the environment compared to the equivalent journey by automobile.

Of the four principal types of freight transportation (trucks, planes, rail, and water) locomotives were the lowest generator of carbon dioxide emissions in 2004, as shown below.

Table 4-4: Carbon Dioxide Emissions by Mode 1994 through 2004 (teragrams of carbon dioxide equivalent)

Year	Passenger cars	Light-duty trucks	All other trucks	Buses	Aircraft	Ships and boats	Locomotives	Other	Total, all modes	International bunker fuels
1994	596.3	386.3	258.8	9.0	176.1	49.9	40.4	50.6	1,567.5	94.2
1995	599.0	401.1	268.5	8.9	171.8	51.9	41.8	51.1	1,594.1	98.0
1996	604.7	414.0	277.3	9.2	180.1	49.5	42.5	51.4	1,628.8	99.3
1997	601.8	426.7	298.0	9.7	179.0	34.0	42.7	54.2	1,646.2	106.1
1998	621.5	437.3	306.5	9.8	181.3	27.3	43.0	48.8	1,675.6	103.3
1999	631.2	455.0	322.4	11.0	186.8	37.5	44.6	49.4	1,737.8	102.6
2000	633.4	458.3	337.9	10.8	193.2	55.1	44.6	48.9	1,782.3	102.2
2001	636.5	462.2	337.0	9.9	183.5	48.1	44.8	46.2	1,768.1	98.5
2002	651.6	474.8	351.0	9.5	174.9	57.0	45.2	49.0	1,813.1	89.5
2003	631.3	509.6	347.3	10.3	171.8	49.7	47.1	48.4	1,815.5	84.1
2004	636.4	526.0	365.3	10.3	179.6	54.4	49.8	48.7	1,870.4	94.5

Key: 1 teragram = 1 trillion grams

Notes: Other carbon dioxide emissions are from motorcycles, pipelines, and lubricants. International bunker fuel emissions (not included in the total) result from the combustion of fuels purchased in the United States but used for international aviation and maritime transportation. Thus, aircraft and ships and boats data included in U.S. total emissions involve only domestic activities of these modes as do all other data shown. Aircraft emissions consist of emissions from all jet fuel (less bunker fuels) and aviation gas consumption. Alternative-fuel vehicle emissions are allocated to the specific vehicle types in which they were classified (i.e., passenger cars, light-duty trucks, and other trucks and buses).

Source: U.S. Environmental Protection Agency, *Inventory of U.S. Greenhouse Gas Emissions and Sinks* (Washington, D.C.: Annual Issues), table 2-17.

In addition to carbon dioxide, the U.S. Environmental Protection Agency (EPA) estimates that for every ton-mile carried, a typical truck emits roughly three times more nitrogen oxides and particulates than a locomotive. T

The use of freight rail can reduce emissions from the transport of freight. Each ton-mile of freight moved by rail, rather than truck, reduces greenhouse gas emissions by two-thirds or more.⁵⁷ A ton-mile of freight moved by rail versus truck reduces greenhouse gas emissions by at least two-thirds. Since 1980, the use of rail, as compared to trucks to move the same volume of rail traffic, has created an average reduction in greenhouse gas emissions of 20 million tons per year.⁵⁸

Similarly, use of passenger rail can reduce emissions compared to the automobile. One person switching to public transit can reduce daily carbon emissions by 20 pounds or more than 4,800 pounds annually.⁵⁹ By example, an Exeter to Boston driving commuter creates nearly 23,816 pounds of carbon dioxide annually. The same commuter on a train contributes 2,500 pounds annually, a nearly 90 percent reduction.

⁵⁷ *ibid*

⁵⁸ U.S. Department of Energy, *Transportation Energy Data Book: Edition 30 -2011*

⁵⁹ APTA, *Public Transportation Facts At A Glance*, 2008



4.2.4 *Communities*

Passenger rail services tend to attract compact development near destinations they serve. This type of compact development can lead to a reduction in transportation and housing costs for residents and a more efficient public infrastructure system for municipalities. Rail service to an area can act as a catalyst for redevelopment that promotes pedestrian mobility. This type of development helps reduce automobile dependency and limits sprawl-type development in nearby areas.

In communities across the State, dispersed development is resulting in increased traffic and an increased dependency on automobiles. This is placing an increased burden on local resources and reducing the amount of open space. Passenger rail service can help re-establish vibrant downtowns, centered around a train station, that are supportive of both residential and business needs. Transit-oriented development patterns include pedestrian activity as the highest priority with a train station as a prominent feature of the community center.

The discussions of economic and environmental benefits presented above indicate that the state rail system has significant existing benefits to New Hampshire. Further, these benefits have the potential to be increased with expanded use of the rail system



New Hampshire State Rail Plan



5. RAIL ISSUES AND TRENDS

This chapter summarizes key issues and trends for New Hampshire's passenger and freight rail network. The chapter begins with a summary of issues related to the New Hampshire rail network that were identified through meetings and stakeholder interviews. This section is followed by a discussion of trends and railroad related issues.

This chapter considers freight and passenger systems separately, but it is important to note that there are significant synergies between the passenger and freight rail systems in New Hampshire, and changes to one will likely impact the other.

5.1 Freight Rail Industry Issues and Trends

Discussions with railroads, shippers, planning agencies and other stakeholders, along with local community and citizen input, and comments received through public outreach meetings provided significant and constructive contributions in identifying the issues and trends. Consolidation of information from these sources, formal data analysis of freight and passenger usage and an assessment of the current state of the rail infrastructure, has identified freight rail-related trends and issues to be addressed to improve New Hampshire's overall transportation future.

5.1.1 Freight Rail Issues

Current Utilization

New Hampshire's rail customers, including both shippers and receivers, depend upon freight rail to sustain their businesses. Many of these businesses support manufacturing jobs in the state. These shippers tend to move bulk commodities, specialty products, and chemicals, which are suited to rail transport either due to weight or distance, and are significantly more costly to transport by truck. In some cases there are no viable transportation alternatives to rail. Interviews with existing and prior rail users confirmed that many would like to increase or resume their use of freight rail if service levels were improved, indicating that increased rail service would be beneficial to their business.

However, the current state of freight rail service in New Hampshire is not robust. Declining overall volumes have led to reduced local service frequency, longer transit time, pick-up and arrival unpredictability and increased inventory and operating costs. This places New Hampshire businesses at a disadvantage relative to other regions.

Nearly all existing rail shippers and receivers indicated that current service levels are barely adequate, and are not sufficient to encourage increased rail volumes. Transit times and the unpredictability of existing rail service were cited as problems repeatedly during the interviews. Continuing deterioration of rail service makes it unlikely for new or expanding businesses to rely on railroads for transportation services.

It should be noted that due to the nature of freight railroad operations, decreased volume invariably leads to decreased service levels while increased volume provides the basis for increased service. In New Hampshire, freight rail volume relative to railroad mileage has declined in recent years and currently is extremely low, even for regional and short line operations. The commonly used "rule of thumb" for management of a rail line establishes approximately 100 rail car shipments per mile (SPM) per year as the minimum required to maintain a railroad, provide acceptable service and sustain profitability. The New Hampshire system as a whole yields about 140 SPM annually. However, much of the freight volume is



concentrated on a few lines and therefore the volume on most branch lines is considerably less than what is needed for rail carriers to provide profitable and competitive service.

Interestingly, shippers do not cite high freight rail rates as a significant barrier to increased use. Among businesses that rely on rail, the principal concern for continued use relates to the dependability of service, the need for increased frequency, and the consistency of local pick-up and delivery.

Rail's Advantages for Business

The shippers and receivers interviewed indicated that rail provides a cost advantage that benefits their business. In addition, they indicated that continued rail access is critical to their businesses' health and future growth.

All stakeholders expressed concern over the availability of rail service in the future. Loss of rail would jeopardize, and potentially close or force relocation of some businesses. Nearly all stakeholders indicated concern with loss of a rail option, citing uncertainty about truck/driver availability and fuel prices and the resulting increased cost and the risks associated with limited shipping alternatives.

Prominent among the issues noted during the shipper/receiver interviews was that trucking is not a suitable substitute for rail. Rail handles heavier, bulkier and longer distance freight, and is transported at a lower overall cost than trucking can provide. Rail provides an alternative that minimizes transportation costs that otherwise would likely be passed on to New Hampshire consumers and businesses.

5.1.2 Freight Rail Trends

As previously noted, the volume of freight being transported by rail has declined during the past five years. There are many reasons for the change in freight rail movements in New Hampshire. Most are a result of global or national economic factors and some have been the result of local conditions or policies. This section highlights the most important trends related to freight rail and recommendations of how New Hampshire can respond to these trends.

Heavier Rail Cars

The federal Surface Transportation Board stipulates that a common carrier rail line must be able to handle at least a 263,000-pound gross (total) weight rail car. However, in recent decades major railroads have been employing heavier freight cars, with a gross weight of 286,000 pounds, as a way to increase efficiency. Therefore, the regulated minimum standard of 263,000 pound cars is quickly being replaced by the heavier industry standard of 286,000-pound rail cars. In some limited heavy haul markets, rail cars with gross weights of 315,000 pounds are utilized.

The 286,000-pound rail cars provide for more cost effective transport of heavy products that benefit shippers and receivers, and ultimately consumers of products made with the shipped materials. Businesses in New Hampshire that cannot receive these heavier cars face shipping delays, extra costs for transloading, or penalty costs related to the partial filling of the higher capacity cars to match the track weight capacity limitations.



Figure 5-1: Rail car weight limits on New Hampshire area rail lines

As depicted in Figure 5-1, the major lines into the region accommodate the use of heavier rail cars. However many older rail lines, including some Class I railroad secondary main lines and branch lines and about half of the short line and regional railroad tracks and bridges nationally, can only accommodate rail cars weighing up to 263,000 pounds. This effectively lessens the ability of those rail lines to offer the same level of capacity to originating or terminating shippers. This can make the use of rail service less attractive due to higher per ton shipping costs and potential added costs for offloading of product at intermediate points for interchange to the 263,000-pound limited rail line. Rail lines that are not capable of handling a 286,000-pound rail car are typically limited due to either bridge or track conditions.

In New Hampshire, only 104 miles of the 443 rail miles has or will soon have capacity to accommodate 286,000-pound rail cars. This includes the 42 miles of the Conway Branch and 38 miles of the 54 mile SLR line through northern New Hampshire. The remaining 17 miles of the SLR line in New Hampshire is limited to a capacity of 263,000 pounds. The balance of the SLR line through Maine and Vermont has a capacity of 286,000 pounds.

The Connecticut River Line of the NECR, which includes 24 miles in New Hampshire, is currently undergoing an upgrade to allow faster speeds for passenger trains. As part of the federally funded project, the entire line, including the New Hampshire segment, will also be upgraded to handle 286,000 pound loads.

The remaining 339 miles of the New Hampshire rail network has a capacity of 263,000 pounds or less gross weight. Since the movement to accommodate 286,000 pound rail shipments is occurring nationally, without an upgrade, many New Hampshire rail customers stand to lose the ability to directly receive and ship interstate shipments. With limited direct rail access, New Hampshire's rail-dependent businesses will either become dependent on transload terminals or seek options in neighboring states.

Vertical Clearances for Double Stack Intermodal Service

An increasing percentage of rail intermodal movements in North America are now in double stack container trains. These trains significantly improve the efficiency and competitiveness of rail intermodal service. Phase I double stack trains (i.e., 8'-6" container on top of a 9'-6" container) require a clearance of 19'-6" and Phase II, or full double stack trains (two 9'-6" containers), require a vertical clearance of at least 20'-8" above the rail.



In southern New England, both the PAR and the CSX lines in Massachusetts are currently capable of accommodating Phase I double stack trains. On the PAR Main line the clearances allow for Phase I double stack trains to travel as far east as Ayer, MA. CSX currently can accommodate Phase I double stack trains as far east as Framingham, MA.

A third Phase I double stack route is available into Southern New England along a route called the Green Mountain Gateway. This route is a collaborative effort of the Canadian National, New England Central Railroad and the Providence & Worcester Railroad, which utilizes the three railroads to provide a route between the P&W intermodal terminals in Worcester, MA to the CN system in New York. This Phase I double stack route was established in 2007 when a tunnel in Bellows Falls, VT was modified to accommodate full double stack trains. Additional improvements along the P&W and NECR are necessary to eliminate clearance restrictions that limit full double stack trains along the route. .

Within northern New England, the only route that provides Phase II clearance is the St. Lawrence and Atlantic, which provides full double stack clearance between Auburn, ME, and Montreal QC, through northern New Hampshire.

Improvements to allow movement of full double stack trains along both the PAR and CSX lines to Eastern Massachusetts are anticipated in the near future. A recent agreement between Massachusetts and CSX will provide improvements to the line to accommodate full double stack clearance as far east as Westborough, MA. CSX is planning to establish Worcester as its double-stack terminal for the region. Additionally, a \$2 million federal grant was awarded to complete preliminary engineering and environmental analysis for the removal of 19 obstructions in two tunnels and 17 roadway, railroad or pedestrian bridges that prevent a full double-stack train from operating along PAR line between Mechanicville, NY, and Ayer, MA. This project will include raising the vertical clearance of the 4.75-mile Hoosac Tunnel in Florida, MA.

There have been many improvements throughout New England during the past decade to accommodate double stack trains. The pending improvements to double stack clearances in Western Massachusetts afford New Hampshire the potential to bring double stack intermodal efficiencies to areas within the State. The principal opportunity for intermodal traffic would appear to be the location of a satellite intermodal terminal in the Nashua area that would provide supplemental service to the Pan Am Railways Ayer, MA facility.

Safety and Security Programs

Rail safety and security is an important issue regarding managing the rail system in New Hampshire. It requires coordination among the private railroads and all levels of government. Various programs are in place at each of these levels to ensure safety and security. Coordination among the involved agencies is a crucial component of rail safety and security for passenger and freight rail providers.

In July 2010, the FRA announced a Final Rule requiring railroad track owners to adopt and follow specific procedures to protect the safety of their bridges, and to strengthen federal oversight of railroad bridge maintenance programs. This rule is a requirement under the Rail Safety Improvement Act of 2008. The Final Rule requires track owners to implement bridge management programs that include at least annual inspections of railroad bridges; know the safe load capacity of bridges; and conduct special inspections if the weather or other conditions warrant such inspections. Since NHDOT is the owner of many rail bridges across the state, this new regulation will require additional resources to ensure that the state is complying with the bridge inspection and record keeping requirements.



Figure 5-2: New Hampshire Primary Branch Lines

efficiently consolidate functions or infrastructure. This enables the railroad to serve customers in a region that otherwise don't have direct access to the railroad.

Many parcels with the size, location, amenities, and access characteristics suitable for freight rail shippers or rail yards have been considered for redevelopment for other types of uses.

Freight intensive uses have size and activity characteristics that are often perceived as incompatible with other land uses. Furthermore, these types of land uses are often not considered the highest and best use for most developable land in the state. Many of these parcels are being converted or rezoned to non-industrial use, while others have been subdivided in a way that precludes future freight intensive uses.

Freight intensive businesses, including but not limited to, those reliant on freight rail service, play an essential role in a modern and sustainable 21st century economy. It is important that community, regional, and state planning efforts recognize the importance of preserving these land use types, understanding the importance for advantageous locations for the freight intensive businesses that help drive the state economy. Although the importance of freight and logistics support is largely discounted at the local level due to conflicting priorities, it is important that they are not undervalued at the broader state and regional levels.

Rail Line Access

The pattern of development of many New Hampshire communities was shaped by the state's railroads. However as transportation options and the economy has changed, business and community reliance on the railroad has waned. However, it is important to ensure that access to rail transportation remains.

Freight Rail Access

Businesses typically make decisions regarding site location or facility expansion based on particular attributes that are important to their specific market sector or business. Most businesses that require a significant level of freight transportation include on the list of site requirement: site size, quality of site access and transportation network, and possibly the availability of rail. Since freight rail service is most convenient and economical to businesses located immediately adjacent to a line, those that are dependent on freight rail service would be limited to sites along a rail line. The availability of commercial sites along active rail lines is limited across the state.

Another way that freight rail customers access the rail network is to transport products to and from a nearby rail yard. Rail yards provide an opportunity for railroads and shippers to



Freight Logistics Parks

The pickup and delivery of individual rail carloads at a shipping or receiving facility is typically the most costly part of a rail movement. It is also the source of much of the variability in rail service performance. Class I railroads and rail customers are increasingly reconsidering the economics of the “first and last mile” for heavier rail shipments. In many cases trucks can accomplish the pickup or delivery more efficiently than can the railroad over light density branch lines like those in New Hampshire. Class I railroads and other companies have invested considerable capital to build logistics parks, distribution centers and other transload facilities to offer customers the economics of rail for the long haul and the flexibility of truck for pickup and delivery. Furthermore, this type of development presents an opportunity for communities to benefit from rail access through the efficient use of freight-related infrastructure while limiting the impact to neighboring properties. In some parts of the country freight logistics parks are being purposefully planned and constructed, while in other locations, like most of those in New England, are developing incrementally around a freight facility, like an intermodal facility. The area surrounding the Auburn Intermodal Facility in Maine is such a location, as is the neighborhood surrounding the West Springfield CSX yard.

Branch Line Support

The railroad network in New Hampshire is made up three main lines and numerous branch lines. The main lines are those that carry the highest volumes in the state and also host all of the through traffic. These main lines include:

- Main Line-West, the main line for Pan Am Railroad,
- Connecticut River Line, the main line for New England Central Railroad, and
- St. Lawrence & Atlantic, the main line for the St. Lawrence & Atlantic Railroad

The branch lines are the remainder of the lines in the state. They can be divided between Primary and Secondary Branch Lines (See Figures 5-2 and 5-3) The Primary Branch lines are those that host multiple significant customers. The Secondary Branch lines serve fewer customers and have lower levels of service.

Although the main lines handle significant through-traffic between northern New England and the Class I rail carrier connections in Massachusetts, the branch lines constitute a pickup and delivery network



Figure 5-3: New Hampshire Secondary Branch Lines



serving companies that ship or receive rail carloads directly at their facilities. It is from these branch lines that many of the benefits of rail to the New Hampshire economy are realized. However, the level and frequency of service on these lines are limited. The volumes on the branch lines necessitate a reduced service frequency; longer transit time, pick-up and arrival unpredictability and, therefore, increased inventory and operating costs for shippers and receivers located along those lines.

Although the current outlook is not overly optimistic, there are many opportunities to change the downward trend of freight rail business in the state. Every freight stakeholder interviewed, (shipper, receiver and carrier alike) outlined specific opportunities for incremental growth of existing rail business. Additionally, the interviews revealed that there is sufficient capacity to support immediate incremental growth with only minimal capital investment. Despite the fragile state of today's rail freight operations in New Hampshire, steps can be taken to encourage and support the growth of freight rail that are in accord with the overall objectives of this Rail Plan.

Rail Line Abandonment

Since the 1920's, over 800 miles of rail line have been abandoned in New Hampshire. The loss of transportation corridors is significant because it is almost impossible to reassemble these linear rights-of-way. These corridors are important to the prosperity and vitality of the state, as they provide for freight and passenger rail service, hiking and biking trails (for both commuting and recreational purposes), and utility needs. Many rail corridors include fiber-optic and other communication lines that are important assets to the economy of the state.

Once rail lines are abandoned, the corridors may disappear if there is no action by state or local agencies, shippers, or other parties. Sections of the right-of-way can be sold to developers, which would result in a loss of corridor continuity. Although rare for New Hampshire rail corridors, if the rail line was purchased with reversion clauses, it could legally revert to its original ownership, namely, the hundreds of individual owners of neighboring properties. When this happens, re-assembling all parcels along the corridor is nearly impossible.

NHDOT has purchased many rail lines over the years that have either been abandoned or as a way to avoid abandonment. The uses of these lines vary once they are in public ownership, with some leased to short line railroads for continued rail operation and others preserved as trails.

In New Hampshire, rail lines have generally been abandoned by the railroad and then purchased by the state; however the potential also exists for the railroads to be "railbanked". This is a process in which the railroad, in a voluntary agreement with a trail agency, allows the use for the corridor as a trail until some railroad would need the corridor for rail service. This process was established in 1983 by Congress as concern grew about the rapid contraction of America's rail network and the potential for the permanent loss of many rail corridors after abandonment.

Once railbanked, corridors are not considered to be "abandoned," and therefore the right-of-way does not revert back to adjacent landowners. The United States Supreme Court has ruled that conversion of a railroad right-of-way to a trail is not an unconstitutional taking of the adjoining property owner's land as long as the trail was developed under the STB railbanking authority.

However, the most effective way to reduce railroad abandonments is to keep railroads in business. Due to the light traffic and low profit margins on the branch lines in New Hampshire, few short line operators can afford to keep the rails, bridges, yards, and other facilities in good condition. Providing financial assistance to railroads with capital improvements is one way to preserve railroad corridors while still receiving the benefits of freight service. Another preservation approach is to provide assistance to shippers and receivers seeking to access or expand their use of freight rail or by otherwise making existing operations more profitable.



Whether maintained in active operation, purchased for preservation, or preserved through railbanking, the rail line corridors across the State of New Hampshire are a resource for the state that would not be easily replaced once lost.

Freight and Rail System Changes

There are changes that occur nationally and globally that impact the operations of the rail system in New Hampshire. There is always some attribute of transportation logistics that is changing the business of transporting goods into, through and out of New Hampshire. The following sections provide a summary of some changes that are likely to impact freight rail movements in New Hampshire in the coming years.

Fuel Prices and Truck Driver Shortages

Railroads are generally 4-5 times more efficient than trucks on a ton-miles per gallon basis. Accordingly, the upward trend in fuel prices has increased trucking costs more than those of rail. The trucking industry is also consistently coping with a shortage of qualified truck drivers. In order to increase the supply of drivers, compensation will have to increase. Both factors have, and will, continue to be positive long term determinates in the competitiveness of rail transportation.

Panama Canal Widening and US Port Diversification

The Panama Canal is currently being expanded to double its capacity. Once complete in 2014, the Canal will be able to accommodate larger ships and more transits. For many years, West Coast US ports, primarily Los Angeles/Long Beach, CA (LA/LB) have handled the bulk of US container imports from Asia, the largest origin for imports. This is still the case but over the last several years, importers have begun diversifying away from LA/LB in order to reduce their exposure to security issues, labor problems and potential inland transportation congestion.



Figure 5-4: Post-Panamax Ship *Emma Maersk*

Consequently, more containers are now moving via all water routes through the Panama Canal to Gulf and East Coast ports. This shift will result in some New Hampshire-bound import containers arriving via truck from these ports versus moving via rail intermodal from the US west coast. It will likely increase intermodal options and capacity in New England. However, since LA/LB is still expected to handle the majority of containerized imports from Asia, it is unclear whether this trend will cause a major shift in transportation flows in New Hampshire.

Decline in Paper and Other Manufacturing

Paper mills traditionally were the heaviest users of rail carload transportation for both outbound product and inbound raw materials in northern New England. As described earlier in the Rail Plan, the last paper mill using rail service in New Hampshire closed in 2007. The production of paper in Maine has also declined, including the recent closing of the mills in Millinocket and East Millinocket, ME. The Maine mills frequently shipped via rail routes through New Hampshire to connect with the national rail network. The decline in paper and other manufacturing in New England have reduced the demand for rail carload transportation to, from and through New Hampshire, reducing traffic density on the state's rail lines and contributing to the continuing degradation in service. As the industry changes, other opportunities may arise for rail to support the forest products industry. For example, there may be an opportunity for rail delivery of forest products to new biomass plants. It is important for state officials to monitor the changing markets and trends to be able to assist New Hampshire railroads and shippers respond accordingly.



5.2 Passenger Rail System Issues and Trends

As with the freight rail industry, the stakeholder interviews, citizen and local community input and comments provided significant and constructive contributions to the outlook of the state's passenger rail system. This information, along with an analysis of existing data, has identified issues, trends and potential recommendations related to the New Hampshire passenger rail system.

5.2.1 Passenger Rail Issues

The following is a summary of issues identified from stakeholder interviews and the public involvement process that relate to the existing state of the New Hampshire passenger rail system.

Freight/Passenger Shared Use

Unlike some regions of the country where rail corridors have reached capacity due to freight rail operations, New Hampshire has an opportunity for shared use of rail corridors. There appears to be a willingness of freight railroad owners in the state to consider passenger rail service on their lines. However it can be difficult to negotiate the details of maintenance costs, responsibilities with host railroads.

Freight railroads in the region recognize that track improvements for passenger service have a secondary benefit to them. The improved infrastructure required for passenger service can enable freight rail operators to respond to their customers with more reliable and frequent service.

The importance of shared use corridors has been acknowledged by many of the rail stakeholders who understand that improvements to passenger rail service and associated infrastructure investments will only be achievable with the support of freight railroads, through their continued operation and maintenance of the freight railroad infrastructure.

Passenger Rail Services

Passenger rail service in New Hampshire on the Downeaster service is considered very successful. Over 200,000 annual trips are generated from New Hampshire stations. This equates to over 41 percent of the total ridership of the Downeaster. The 35,600 trips to or from the New Hampshire area stations on the Amtrak Vermonter account for a similar 45 percent of total ridership on the train service that operates one daily round trip.

A principal consideration noted by many stakeholders is the need to fully integrate passenger rail with the rest of the transportation system. Specifically, providing passenger rail service to Manchester-Boston Regional Airport is seen as an important component of airport service expansion opportunities. Furthermore, rail complements other transportation systems, principally intercity bus, which makes a non-auto travel choice more practical. Examples of improvements for system integration would be complementary schedules, ticket reciprocity, intercity bus connections to rail stations to reduce the need to expand parking, and employer-provided shuttle buses from rail stations to job sites.

There is interest and support for expanding passenger rail services in New Hampshire, including along the New Hampshire Capitol Corridor, into communities in the Seacoast area, Haverhill to Plaistow, and in the North Country. It is understood that expanded commuter rail service would connect jobs and people, including the potential for "reverse commuting" to bring employees to businesses wanting to establish/expand in New Hampshire.

The potential for consideration of each of these potential services is discussed in the next section of the Plan.



Furthermore, there continues to be interest regarding passenger rail service between Boston and Montreal. Evaluation of passenger rail service between the two cities will soon be initiated by Massachusetts and Vermont. This study will consider the option of passenger service between Boston and Montreal via Springfield, MA and along the Connecticut River line and the New England Central Railroad line through Vermont. Should passenger rail service be established on the New Hampshire Capitol Corridor, it would be potentially possible to use the Lebanon to Concord inactive rail corridor to establish a complementary connecting route that would provide additional options for riders in New Hampshire.

5.2.2 Passenger Rail Trends

Passenger rail service typically requires funding from federal and state sources to support construction and/or operation of the service. The current demands for limited transportation funds will constrain and potentially reduce funding for some passenger rail projects in the coming years.

Recognizing the demands for limited financial resources, it is deemed prudent to identify priorities for passenger rail projects in New Hampshire. The following recommended priorities for passenger rail service were presented to the New Hampshire Rail Transit Authority, the entity established by the legislature to establish passenger rail in the state.

The first priority identified is to **maintain existing passenger rail services** that are currently in operation. This includes the Amtrak Downeaster, the Amtrak Vermonter and the three tourist/excursion services in the state. Ensuring the continued operation of these successful services should be the focus of resources for the state.

The second priority is for **expansion of services along two of the principal rail corridors** in the state. The service expansion priorities include the New Hampshire Capitol Corridor, providing service between Boston, MA and Concord, NH; and the Plaistow Commuter Rail Service, an extension of commuter service from Haverhill, MA to Plaistow, NH. Both of these potential services will be considered in detail if proposed studies are undertaken. The decision of whether to proceed with implementation of either project will be made upon completion of the respective studies. The studies, to include preliminary engineering, financial planning, and environmental analysis, are a required step in order to compete for federal funds for implementation. The results would also inform state legislators who must approve the projects.

The third priority for passenger services includes **all other potential passenger rail corridors** in the state. Identified corridors for future consideration include the

- Boston-Montreal High Speed Rail service, Portland- Montreal Intercity Service,
- Passenger rail services to Portsmouth (utilizing the Portsmouth or Hampton Branches),
- Passenger rail service along the former Manchester & Lawrence Line,
- Intercity passenger rail service from Portland to Montreal through northern New Hampshire, and
- Expansion of tourist-based service along the Mountain Division line to Maine.

Many of these services in the third tier priority list have been examined in past studies and have not had sufficient support to advance. However, changing conditions in corridor communities or other service attributes may warrant a re-examination in the future.



Existing Passenger Rail Services

Passenger rail in New England and across the country has been growing the past decade. Since 1994, the MBTA commuter rail system has expanded with the addition or restoration of service along six lines providing service to Worcester, Newburyport, Providence, RI, and communities in southeastern Massachusetts along corridors known collectively as the Old Colony Lines. During this period, ridership on the MBTA commuter rail system has climbed from 21.6 million riders in 1993 to 39.2 million riders in 2008. Commuter rail service is now a critical transportation mode for eastern Massachusetts. This 80 percent growth in commuter rail ridership in Massachusetts is consistent with trends being experienced across the nation. Amtrak ridership has grown by 44 percent during the past 11 years and does not show signs of slowing (Figure 5-5).

Amtrak Ridership Growth

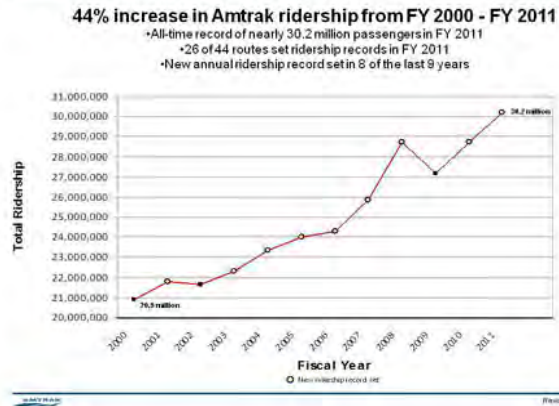


Figure 5-5: National Amtrak Ridership Growth

Growth in the use of passenger rail service in New Hampshire has occurred during the past five years. After a decline in ridership between 2000 and 2006, ridership on the Vermonter has rebounded and is now higher than it was at the turn of the century. The Downeaster has seen continual growth as more and more travelers realize the benefits of the service. Ridership on MBTA commuter rail lines that serve New Hampshire riders (Lowell Line and Haverhill Line) remained relatively steady over the past five years at approximately 5,000 riders per day despite increasing fares, rising parking costs and a weak economy.

However, continued operation of the Amtrak services within New Hampshire is not assured. Funding for operations of the Amtrak services that pass through New Hampshire is likely to change in the coming years. These changes may impact the operation of the services, as the state sponsors, Vermont and Maine, seek ways to adapt to the projected increased costs.

Section 209 of the Passenger Rail Investment and Improvement Act of 2008 (PRIIA) directs the states and Amtrak to “develop and implement a single, nationwide standardized methodology for establishing and allocating the operating and capital costs among the States and Amtrak” related to trains that operate on corridors of 750 miles or less. The intent of Section 209 is to ensure that Amtrak treats all states equally and to allocate to each route a proportionate set of costs that reflect the routes’ relative use. This new allocation of costs will impact the cost of service to Vermont and Maine for these services, and since the policy establishes that the operating losses of a corridor service must be covered through a combination of ticket revenues and other state support, the continued operation will be (as it always has been) contingent upon support of the sponsors of the service.

Freight Railroads and Passenger Rail

One of the interesting factors driving expansion of passenger rail services across the country has been a shift in attitude of freight railroads toward passenger rail services. The freight railroads generally own the rail infrastructure that most passenger trains operate over. There has been a growing recognition that allowing passenger trains access to their rail lines, which they are not required to provide except for Amtrak, has some benefits to their corporations. There is a growing understanding that passenger rail services not only generate additional revenue from their infrastructure, but also provide additional funds to strengthen the infrastructure and increase the overall line capacity for both types of service. This



change in outlook has been affirmed through discussions with the major rail operators in New Hampshire. A recent example is the plan for the Florida East Coast Railroad to invest close to \$1 billion to initiate privately run passenger service on its freight rail corridor.

In addition, several freight railroads have recognized the potential economic benefits of commuter rail and are actually involved in the day-to-day operation of commuter trains on their lines. Freight railroads now sell their operational services to nine of the 26 commuter rail systems in North America. This is a dramatic change in attitude and support of passenger rail by the freight railroads as compared to the 1970s.

Since both passenger rail and freight rail services provide benefits to the state, rail lines should be viewed and assessed based on their ability to facilitate both movements. There are very few passenger rail corridors in the nation that are maintained and operated exclusively for passenger rail services and almost all commuter rail and intercity rail lines host both services. The two types of services are often complementary, in that the expenses associated with operations and maintenance of the line can be shared between them. All of the intercity passenger rail services in northern New England operate on a shared trackage basis. Exploring arrangements to advance the mutual beneficial arrangement of shared trackage may be particularly beneficial in moving forward with most of the passenger rail initiatives.

Many of the freight railroads in New Hampshire have expressed a willingness to cooperate with public entities in the development of shared use corridors. This is not a foregone conclusion in many parts of the country. Since most rail lines are privately owned, a freight railroad must first ensure there is sufficient capacity for their own business requirements before allowing that capacity to be used for passenger rail purposes. It appears that there is sufficient capacity in most of the New Hampshire rail network to facilitate shared use, although improvements would typically still be necessary in order to facilitate passenger train movements and to minimize or eliminate operational impacts to the freight railroad.

Safety is always an important concern in assessing shared corridors. Implementation of new intercity passenger rail services will need to be integrated with existing freight rail services. The Rail Safety Improvement Act of 2008 requires the implementation of positive train control systems on main lines carrying intercity or commuter rail in regular service. Positive train control is a system designed to prevent collisions between trains, over-speed derailments, incursions into track work zones, and movements through misaligned switches. These systems must be installed by December 31, 2015. A modification to the regulations made in 2010 exempts rail line segments from the regulation that have volumes of less than 5 million annual gross tons. This exempts all lines within New Hampshire from the requirement of installing positive train control.

Ultimately, implementing new passenger rail services will require agreements between service sponsors, the hosting freight railroads and the passenger rail operator to establish responsibilities regarding operations and capital improvement requirements. The provision for capacity enhancements and safety improvements will need to be a part of the agreements.

Regional Railroad System Improvements

The New England railroad system is experiencing a period of significant investment and improvement unlike any other during the past 30 years. In 2009 a vision for the New England High-Speed and Intercity Rail Network was collectively developed by the six states. During the same year, the federal government initiated an unprecedented level of investment in passenger rail. Agreement within the region on priorities, along with the infusion of federal funds, has led to significant improvements over the past three years. The projects /improvements included in the vision are shown in Table 5-1 along with the current status.



Table 5-1: Status of Projects included in the New England High-Speed and Intercity Rail Network

Project/Corridor	State	Status
Auburn, ME to Montreal, QC Long-Range Rail Corridor	ME, NH, VT, Canada	Draft Feasibility Study Completed
Downeaster Improvements	ME, NH, MA	Study Underway
Downeaster Brunswick Extension	ME	Improvements Underway
Western Corridor (VT)	VT, NY	Alternatives Analysis Underway
Vermont Service Improvements	VT, NH, MA, CT,	Improvements in Construction
Knowledge Corridor	VT, NH, MA	Feasibility Study Completed
Connecticut River Line Improvements	MA	Improvements in Construction
Boston-Montreal/Inland Route Improvements Study	VT, MA, CT	Study Underway
South Coast Rail Alternatives	MA	Study Underway
South County Rail	RI	Improvements Underway
Northeast Corridor Capacity Improvements	RI	Improvements Funded
New Haven-Hartford-Springfield Improvements	CT, MA	Improvements in Design

Passenger Intermodal Connections

The vision for transportation in New Hampshire includes a multi-modal transportation network. This requires the modes to be connected in a meaningful way so that users of the network can transfer from one mode to the other without significant difficulties. As the rail system in New Hampshire changes over time it is important to focus efforts on these intermodal connections. For the freight rail network, connections are part of the logistics chain and rail connections to seaports, airports or the highway network are an integral part of the network design. For passenger services, the intermodal connections can be difficult to achieve if not planned and actively managed since the schedules and operations can change from time to time. For the New Hampshire rail network, the three primary modes that require careful planning and management are connections to airports, local transit and intercity bus service.

The recently completed Manchester-Boston Regional Airport Master Plan includes, as a component of the growth of service at the airport, an intermodal center that would provide the connection between the airport and bus and train services. Providing such a connection is important to a fully functioning airport that does not rely solely on access by cars. Access to airports via rail transit in the US is as high as 13 percent of all trips, and intercity rail (Amtrak) service to airports has provided up to six percent of trips⁶⁰. Although these mode shares are small, the benefits to area business travelers, tourists, and residents are important. Providing rail access to the airport expands cost-effective ground transportation alternatives.

⁶⁰ Intercity Passenger Rail: Implications for Urban, Regional, and National Mobility, Sperry, Benjamin R. and Morgan, Curtis, December 2011, University Transportation Center for Mobility



Local transit is an important way to connect to passenger rail services. Local transit extends the reach of passenger rail services by allowing passengers who live beyond walking distance to access the train without a car. In order to maximize local transit connections to train services the train station must have a convenient location for buses to drop off and pick up passengers. The bus services must also operate a route that provides convenient connections. Additionally coordination between bus and train operations is needed so that when trains or buses are late, other services can be delayed or the riders have some type of backup transportation. The COAST bus route between Berwick and Dover stops at the train station but has a convenient connection with only three of the 10 daily trains. Such a disconnect between modes easily occurs as train and bus schedule are changed over the years.

It is also important to make sure that other modes have access to train stations. Providing parking at or near a station is typically a core requirement of a station, but if possible bicycle routes and pedestrian/recreation pathways should be connected to the station. A transportation network that provides seamless connections allows travelers to maximize choice and convenience by using the mode that best meets their transportation needs.

Community Development

Projected changes in population provide one indicator of the change in demand for travel across a region or across the State. In addition, as regional highway systems are overburdened, commuter and intercity rail transit may offer an option to address growing congestion. From 2000 to 2010, population in the state increased 6.5 percent. According to 2006 projections developed by the New Hampshire Office of Energy and Planning, growth in New Hampshire is projected to continue at close to the same rate with an eight percent growth between 2010 and 2020 and a six percent growth between 2020 and 2030. Fifty percent of the state's projected population growth is anticipated to occur in Hillsborough and Rockingham counties, the State's two largest counties, which also are home to the Downeaster and the New Hampshire Capitol Corridor.

Passenger rail presents an opportunity for local communities to plan future growth around a multimodal transportation vision, maximizing employment uses and more compact and efficient development near station locations. Passenger rail stations can be the focus for economic development activities of a host community while also enhancing the economic competitiveness of the region as a whole through improving reliable and timely access to important locations such as employment centers and educational institutions.

There are examples throughout New England and the rest of the country in which passenger rail stations have provided the catalyst for community improvements, both in the form of urban design and livability improvements, but also through expanded economic development. Carefully planned station area development, known as Transit Oriented Development, can increase residents' mobility and lower their combined cost of housing and transportation.

Transit Oriented Development is comparable to the historic town and village patterns of New Hampshire communities. A study conducted for the Downeaster found that several rail-accessed communities experienced economic development benefits three years after intercity passenger rail service was initiated. Two hotels and a \$20 million residential and retail complex were constructed in close proximity to the Old Orchard Beach rail station, and Saco, ME has also been developing property in the rail station area⁶¹.

⁶¹ Amtrak Downeaster, Overview of Projected Economic Impacts, A Report to Northern New England Passenger Rail Authority (NNEPRA), prepared by the Center for Neighborhood Technology, March 2008.



Furthermore, the study found that when the service is extended to Brunswick, it is estimated that more than 7,000 jobs will be created in New Hampshire. Transportation cost savings for the state's residents are estimated to reach \$151 million per year by 2030. In addition, the added economic activity associated with the Downeaster is expected to generate \$4.7 million in tax revenues.⁶²

Tourism Industry Trends

Travel and tourism is the second most important industry for the state's economy, based on employment size. When the share of gross state product is used as the measure of an industry's supporting share of the state's economy, travel and tourism ties for the third most important industry, due to its relatively low wage rates.

Tourist railroads are a component of state's tourist economy. They serve approximately 170,000 riders every year, many of whom are tourists. The tourist railroads provide an important part of a New Hampshire experience for some tourists. Continued public support of tourist railroads helps to sustain the tourism industry in New Hampshire.

During fiscal year 2010, \$3.9 billion was spent by travelers and tourists in New Hampshire, supporting more than 60,000 full and part-time jobs, with payrolls and other earnings of nearly \$1.4 million. Although this is a 12.4 percent decrease from the 2008 level, it represents 6.6 percent of gross state product.

The annual average spending per visitor day was \$76.71 in 2010, 9.6 percent lower than \$84.82 spent in fiscal year 2008.

Because of its proximity to larger cities, New Hampshire tourism has a much larger proportion of day trips included in its total visitor days. Approximately one-third of overnight visitors to New Hampshire stay with friends or relatives or at second homes. As a result, restaurant spending represents a larger share of tourist spending than lodging, which is not the case in most other states. Additionally, compared with most other states, travelers to New Hampshire spend a larger share of their money at retail establishments (tourist railroads would be considered a retail establishment).

Sixty percent of all New Hampshire rooms and meals tax revenues (or \$132 million) that were collected in fiscal year 2010 are estimated to have come from traveler spending. The remainder came from resident spending. The effort to support tourist railroads, and therefore the New Hampshire tourist economy, has the potential to translate into additional rooms and meals tax for the state, in addition to supporting the businesses and jobs that are part of the New Hampshire tourist economic sector.

System Expansion

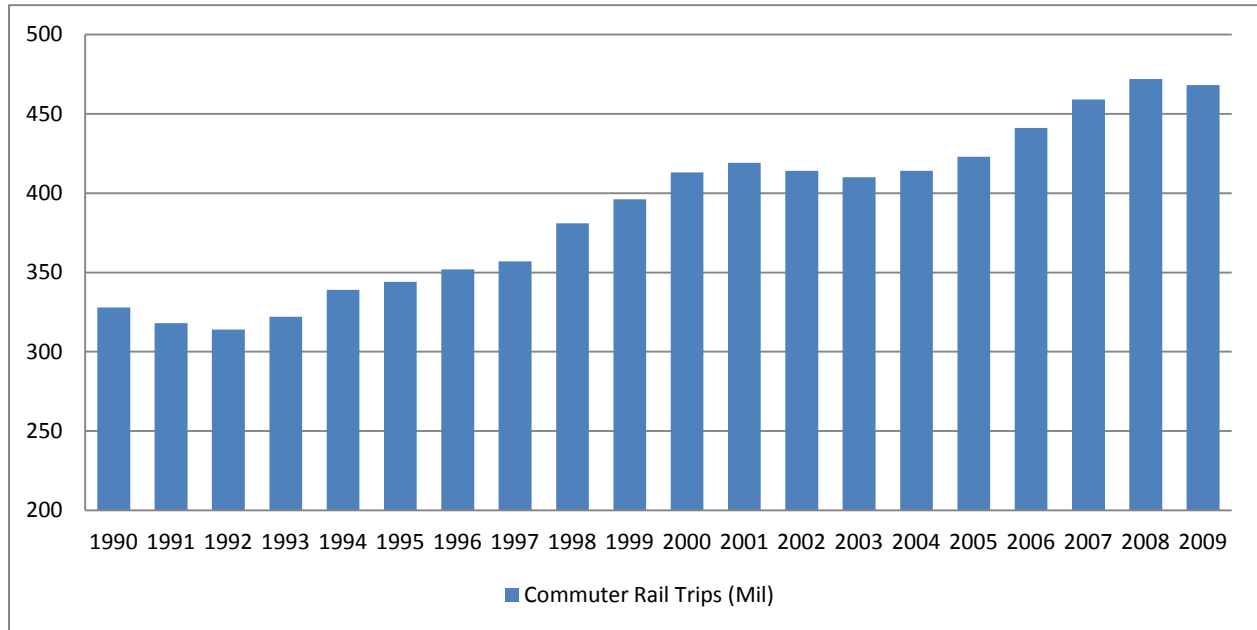
National growth in passenger rail services

Without question, the overwhelming trend in passenger rail transportation in the U. S. over the past two decades has been growth and expansion. State-supported passenger rail operations are now an integral element of the Amtrak's intercity passenger rail network. These services generally operate in corridors within a single state or connect two states and serve intermediate-distance trips. State corridor routes provide a valuable alternative to air or auto travel.

⁶² Amtrak Downeaster, Overview of Projected Economic Impacts, A Report to Northern New England Passenger Rail Authority (NNEPRA), prepared by the Center for Neighborhood Technology, March 2008.



Figure 5-6: National Commuter Rail Ridership (1990-2009)



Commuter rail services have been a growing mode of transportation across the nation. Since 1990, there have been 14 new commuter rail services initiated around the country. These new services are not limited to the major east coast cities (such as Boston, New York and Philadelphia) that have historically been supportive of commuter rail services. New commuter rail systems have been developed in cities across the country such as Albuquerque, NM, Nashville, TN, and Los Angeles. Creation of new systems, along with ridership growth on older systems, has translated into a 42 percent increase in commuter rail trips nationally.



6. RAIL SYSTEM RECOMMENDATIONS

This chapter includes recommendations for projects and initiatives that can be undertaken to support the railroads in the state, through efforts to maintain current functions and volumes of freight rail and passenger rail services and identifying opportunities to enhance use of the rail resource. A summary list of recommendations, identified by issue category, is included in Table 6-1, and additional information is provided for each recommendation in the following sections.

Table 6-1: New Hampshire Rail Plan Recommendations Summary

Category
Recommendation
Promote Reduction of Carload Weight Restrictions
Support grant funding for eliminating carload weight restrictions on the St. Lawrence and Atlantic Line.
Collaborate with Maine and Massachusetts to raise the weight limits on MBTA-owned lines in Massachusetts that serve New Hampshire
Promote Improvement to Clearances to Support Intermodal Traffic
Continue to design overhead bridges with 22'-0" clearance.
Coordinate with New England states to develop a region-wide approach to eliminating vertical constraint on New England main lines
Continue Safety/Security Program
Continue supporting maintenance/upgrade of at-grade crossings through allocation of federal funds to grade crossing improvements
Continue NHDOT track inspection program
Continue NHDOT coordination with industry and federal rail security programs
Promote Development of Freight Distribution Areas
Advance plans for development of freight intermodal facility in southern New Hampshire
Provide technical support to identify and plan for freight distribution centers along rail lines
Promote Investment in Branch Lines
Support track and bridge maintenance on state-owned lines
Support grant funding for branch line upgrades
Develop Industrial Rail Access Program
Initiate program to provide financial support (in partnership with shippers/railroads) for infrastructure improvements that increase rail access
New England Regional Coordination
Participate in regional coordination efforts to plan and improve the New England railroad network
Preserve Rail Lines
Continue policy of acquiring abandoned rail lines with potential for future use
Ensure that state-owned abandoned rail rights-of-way are available for future railroad use



Table 6-1: New Hampshire Rail Plan Recommendations Summary (Continued)

Category / Recommendation
Rail Program System Monitoring/Planning
Continue NHDOT program of rail system monitoring and planning to identify ways to best leverage railroad assets for the state
Establish Shipper Training/Support by State Officials
Initiate program to provide information to shippers on how to utilize rail services
Existing Passenger Rail Services
Identify approaches to assist with implementation of the Downeaster and Vermonter Service Development Plans
Shared Freight/Passenger Corridors
Support grants to fund improvements to shared freight/passenger corridors
Transit Supportive Land Use
Encourage Transit Oriented Development
Tourist/Excursion Services
Support Tourist/Excursion Rail Services
Passenger System Expansion Opportunities
Implement recommendations of studies of the New Hampshire Capitol Corridor
Implement recommendations of pending study of the Plaistow Commuter Rail Extension

6.1 Freight Rail System Recommendations

Promote Reduction of Carload Weight Restrictions

Recommendation: Support grant funding for eliminating carload weight restrictions on the St. Lawrence & Atlantic Line.

NHDOT, on behalf of the St. Lawrence and Atlantic Railroad, applied for federal funding for a track improvement project. NHDOT should support any future grant funding application, for the reasons state in this excerpt from the 2011 application to the TIGER program.

The St. Lawrence and Atlantic Railroad (SLR) Upgrade Project will improve the rail corridor connectivity of northern New England to the national and international rail network, offering access to Class 1 railroads including CSX, NS and CN. The railroad corridor directly connects to the Port of Portland, Maine and facilitates connections to the Ports of Vancouver/Prince Rupert, New Orleans/Mobile, and Halifax. It also provides direct access to and from a number of key Canadian markets, as well as longer-distance international destinations in Mexico with the railroad's CN Alliance routings. Ensuring that this connectivity is preserved and enhanced is critical to the continued viability of freight rail in the region and the economic development of the North Country in New Hampshire. The rail upgrades proposed will replace 20.6 miles of rail with continuous welded, control-cooled rail that allows for larger capacity 286,000 pound rail cars thus completing a rail corridor project that began a decade ago.⁶³

⁶³ St. Lawrence & Atlantic Rail Upgrade - "Transportation Investment Generating Economic Recovery" (TIGER) Grant Application, 2011



The project is estimated to cost \$12.5 million for construction. St. Lawrence and Atlantic Railroad would provide 40 percent (or \$5 million) of the funding with the remainder coming from the federal program.

Recommendation: Work with Maine and Massachusetts to raise the weight limits on MBTA-owned lines in Massachusetts that serve New Hampshire

The rail traffic that travels in the seacoast and southern New Hampshire areas generally passes through Massachusetts on the PAR Main line. This line from Mechanicville, NY to Ayer, MA is currently being upgraded to accommodate 286,000-pound rail cars as part of the establishment of the Patriot Corridor. However, the remainder of the PAR Main line in Massachusetts (Ayer to Plaistow) and the New Hampshire Main line (North Chelmsford, MA to Nashua) are limited to 263,000 pounds, thereby limiting access of heavier rail cars to New Hampshire.

Although physical considerations such as bridge capacity might contribute to the 263,000-pound limits, the primary restriction is the result of language in prior agreements. The track conveyed by Penn Central/Conrail and B&M/Guilford to the MBTA in the 1970s was transferred with the 263,000-pound limits in place. While the MBTA has rebuilt much of the rail infrastructure to support its commuter operation, it has not changed the weight restrictions on these lines.

An assessment of the subject lines in Massachusetts may find that the lines are capable of sustaining heavier rail car loadings. However, since the MBTA is only required by contract and deed restrictions to maintain the line to 1970s loading condition, there is no incentive to adjust the weight limit to 286,000 pounds. Allowing heavier freight rail cars on the lines could translate to increased maintenance costs for the Commonwealth. It may be possible to address these concerns through negotiating new levels of fees with the freight carriers, as has been done on other commuter lines in the eastern United States.

Since this is an issue for railroads and rail customers in both Maine and New Hampshire, it is recommended that the issue be addressed regionally through efforts to establish priority routes within the New England region and pursue joint funding opportunities.

Promote Improved Clearances to Support Intermodal Traffic

Recommendation: Continue to design overhead bridges with 22'-0" clearance.

Much of New Hampshire's rail infrastructure was originally built to accommodate rail cars with a height of 15 feet. With the general adoption of larger rail cars, most notably tri-level auto carriers and double-stack intermodal trains, a vertical height clearance of 20'-8" is required to support full height double stack intermodal trains.

New Hampshire state law RSA 373:39 establishes the minimum clearance for railroad overhead bridges at 22'-0", except with the written consent of the Department of Transportation. The NHDOT Bridge design manual notes that some railroads may require clearances of up to 22'-6" and further notes that approval for slightly lower clearances may be provided if the bridge design allows for future lowering of the track.

It is recommended that the current bridge design standard be maintained.

Recommendation: Coordinate with New England states to develop a region-wide approach to eliminating vertical constraint to New England main lines

Since the railroad system is a network, vertical constraints in Massachusetts and Vermont constrain the lines that run through much of New Hampshire. It is recommended that clearance improvements be addressed at a regional level. Coordination with the other New England states related to the timing and parameters of any improvements being made will increase the effectiveness of all improvements.



As previously noted, improvements are being planned in Massachusetts to allow movement of full double stack trains along both the PAR and CSX lines to Eastern Massachusetts. Upon the completion of those improvements there will be additional focus on making clearance improvements in northern Massachusetts and New Hampshire. The primary corridor for evaluation of bridge clearance improvements should be the Pan Am Railways Main line, which has the highest traffic volumes of traffic and may benefit the greatest from vertical clearance improvements. In addition to some clearance restrictions in Massachusetts between Ayer and Haverhill, there are clearance improvements that would need to be made in New Hampshire.

Table 6-2 includes the existing overhead bridge clearances along the line and the current maximum vertical intermodal container use that each bridge can accommodate. There are 13 bridges along the line that restrict use of mixed-double stack trains and an additional 3 bridges that would require modification to permit full-double stack clearances.

Table 6-2 Overhead Bridge Vertical Clearances on Pan Am Railways Mainline

Roadway Name	Town	Existing	Maximum Intermodal Use
Rollins Road	Rollinsford	21'-6"	Full Double Stack
Oak Street	Rollinsford	17'-8"	Single Container
Washington Street	Dover	16'-8"	Single Container
Spaulding Turnpike (NH 16)	Dover	16'-8"	Single Container
Littleworth Road (NH 9)	Dover	21'-4"	Full Double Stack
Knox Marsh Road	Madbury	22'-6"	Full Double Stack
Madbury Road	Durham	23'-2"	Full Double Stack
Route 4	Durham	23'-3"	Full Double Stack
Old Route 4/ Main Street	Durham	17'-0"	Single Container
Mill Road	Durham	18'-9"	Mixed Double Stack
Bennet Road	Durham	18'-9"	Mixed Double Stack
South Main Street (NH 152)	Newmarket	17'-7"	Single Container
New Road	Newmarket	17'-11"	Single Container
Exeter Road (NH 108)	Newmarket	17'-7"	Single Container



Table 6-2 Overhead Bridge Vertical Clearances on Pan Am Railways Mainline (Continued)

Main Street (NH 85)	Newfields	21'-0"	Full Double Stack
NH 101	Exeter	22'-5"	Full Double Stack
Park Street	Exeter	17'-7"	Single Container
Giles Road	East Kingston	18'-5"	Single Container
Powder River Road (NH 107A)	East Kingston	18'-5"	Single Container
Pond Street	Newton	17'-7"	Single Container
Kingston Road	Plaistow	22'-1"	Full Double Stack
Plaistow Road (NH 125)	Plaistow	20'-0"	Mixed Double Stack/Autorack
NH 121	Plaistow	21'-3"	Full Double Stack

Source: National Bridge Inventory, Federal Highway Administration, 2011 data

Continue Safety/Security Programs

Recommendation: Continue supporting maintenance/upgrade of at-grade crossings through allocation of federal funds to grade crossing improvements

Since the 1970s, much work has been done to improve the safety of public rail-highway grade crossings. The reduction of grade crossing accidents has been attributed to the nationwide effort to improvement infrastructure at rail-highway grade crossings. The principal infrastructure improvements have been warning device upgrades to improve train approach notification, and physical changes to improve driver visibility of approaching trains. Improvements to grade crossings have been based on prioritization of existing grade crossing conditions. The development of the prioritization list included consideration of a number of trains, highway vehicles, existing warning devices, and other existing conditions.

Much of the funding for these improvements has come from federally administered programs, especially the Section 130 grade crossing program. This program typically provides for 80 percent federal funding, with the remaining 20 percent match being provided by state, local and/or railroad sources.

It is recommended that the State continue to obtain and administer funds to support the Operation Lifesaver program, and continue making improvements to grade crossings through the use of federal funds, including the Section 130 program.

Recommendation: Continue NHDOT track inspection program

NHDOT currently conducts railroad track inspections in the state. This effort is an integral part of the national program of track inspection administered by the Federal Railroad Administration (FRA). NHDOT currently has a federally-certified inspector to inspect compliance with FRA mandated Track Safety Standards. The NHDOT inspector augments efforts by regional FRA inspectors to provide field inspection of track within the state of New Hampshire.

The benefit of having an NHDOT inspector is two-fold. The NHDOT inspector provides not only increased inspection of railroad facilities within the state, but also provides valuable input into the Rail and Transit Bureau and railroads regarding overall rail safety and track conditions within the state. The NHDOT rail inspector is a member of the Rail and Transit Bureau staff. It is recommended that NHDOT continue to maintain the position of the state rail inspector.



Recommendation: Continue NHDOT coordination with industry and federal rail security programs

As part of the general increase in security measures undertaken recently within the country, security programs related to the movement of freight have been greatly increased. Within the freight industry, these measures are focused on the potential movement of unlawful materials and the protection of commodity movements against sabotage and other illegal activities.

As part of NHDOT's participation with Federal Railroad Administration safety inspection program, NHDOT staff has been active in local, state, and federal activities regarding the security of freight movements within the state and region. Security related activities have included the evaluation of infrastructure, railroad operations and emergency preparedness. It is recommended that NHDOT continue to participate in the assessment of security measures utilized to support the safe transportation of passengers and commodities over the rail system the New Hampshire.

Promote Development of Freight Distribution Areas

Recommendation: Advance plans for development of a freight intermodal facility in southern New Hampshire

An intermodal terminal in New Hampshire would stimulate additional use of intermodal service in New Hampshire since it would reduce drayage costs for many customers.

Two of the three primary intermodal facilities that currently serve New Hampshire are expanding in both size and service. The railroads (CSX and PAS) have made considerable investment in the terminals and the rail lines that serve them. Although the improved facilities will have capacity for volume growth, once capacity is reached there is little physical room to expand the facility beyond its current size. As intermodal volume continues to grow there may eventually be a need for an additional intermodal terminal or freight facilities in eastern New England.

There are sites in southern New Hampshire that may be suitable for a satellite intermodal terminal. A terminal in the Nashua or Merrimack area could provide connecting train service to the CSX or PAS intermodal train network and absorb some of the expected growth in intermodal volume. To be compatible with the national intermodal network, double stack clearance would likely be required from the CSX or PAS main lines to the terminal in Merrimack.

In order to assess the potential future interest in an additional intermodal terminal, New Hampshire should study the CSX and PAS growth plans as well as the potential growth demographics for truckload and intermodal freight in eastern New England. It should also initiate discussions with CSX and PAS to determine their plans to handle additional growth once the current terminals reach capacity.

Recommendation: Provide technical support to identify and plan for freight distribution centers along rail lines

There may be other locations within the state that are appropriate for development of a freight distribution center along one of the state's rail lines. Due to the industrial nature of freight rail transportation facilities including specific traffic access and circulation needs, planning land use for the areas surrounding freight distribution centers is important. Planning activities can include:

- Environmental or community impact studies,
- Land use assessments, and
- Economic development analysis.

Land use planning near potential freight facilities can support economic development activities focused on transportation while minimizing potential conflicts between freight transport and nearby land uses. Specific technical assistance that can be provided to municipalities includes:



- NHDOT participation with regional planning commissions to develop the freight component of regional transportation and land use plans. NHDOT can facilitate coordination efforts with railroads, freight operators, shippers, and receivers in order to provide information to local constituencies on current logistic and freight considerations.
- NHDOT assistance to local municipalities in efforts to enact freight rail supportive zoning in areas where conflicts or expansions may occur.
- Development of freight-supportive land use guidelines. Guidelines for use by New Hampshire municipalities could include types and sizes of buffers zones between incompatible land uses or methods to identify and protect rail-served properties that are advantageous for future rail supportive development.

Promote Investment in Branch Lines

Recommendation: Support grant funding for branch line upgrades

On many New Hampshire branch rail lines, the current volume of rail shipments produces insufficient revenue to support proper maintenance of the line. With decreased or deferred maintenance, railroads are sometimes forced to lower operating speeds for safety purposes, which can result in degraded service to customers, including less frequent or reliable service, longer delivery times and increased shipping costs. Providing assistance to railroads for the maintenance of their infrastructure in turn supports area rail-served businesses by enhancing the viability of the railroad line that serves them.

It is recommended that support to branch line railroads in the state be provided through assistance in seeking and applying for capital project grant funding.

The first improvement to be supported is rehabilitation of the Conway Branch from Rollinsford to Ossipee. Improvements to this line will support the continued principal movements of gravel and potentially lead to increased rail shipments of propane or other commodities to customers along the line. The line is in need of general track upgrades, including tie replacement, ballast replacement and track surfacing.

Additionally, it is recommended that grant funding be sought to improve the primary and secondary branch line segments of the Pam Am Railways New Hampshire Main line (from Nashua to Concord). Current track conditions limit train speeds and have been cited by the railroad and shippers as a factor in service reductions to the Nashua, Manchester and Concord areas.

Improvements could be made incrementally, with the first phase to include upgrades as far north as the rail yard in Nashua. This section would improve regional connections between New Hampshire and the principal PAR classification yard in East Deerfield, MA. Nashua Yard is the base of operations for delivery of rail cars to PAR New Hampshire customers. Movements to the New England Southern short line railroad also originate from Nashua Yard. PAR identified that improved track speeds on the New Hampshire Main line would potentially lead to improved frequency and service reliability to Nashua and other New Hampshire locations. Increased utilization of the rail service in and around Nashua could subsequently support further investments in the line north of Nashua and potentially to the Hillsboro Branch that extends from Nashua to Wilton and Bennington.

Improvements to the New Hampshire Main line would also support the viability of an intermodal container site in the Nashua/Manchester area. It has been noted that the existing PAS Ayer intermodal facility is constrained by physical limitations of the site. It has been suggested by the railroad that with improved track conditions, a satellite container facility in the Nashua area may be practical.

A conceptual evaluation of the potential benefits for these branch line improvements is provided in Chapter 7. Conceptual benefits for passenger services have been included in the analysis.



Recommendation: Support track and bridge maintenance on state-owned lines

It is recommended that NHDOT continue to support track and bridge maintenance on state-owned rail lines. NHDOT owns many rail lines including both active and inactive corridors. To maintain the integrity of the rail corridors and support the active rail operations, NHDOT provides maintenance support for track and bridges of state-owned railroad lines.

This maintenance program is focused on maintaining critical infrastructure, including railroad bridges. The program has utilized limited state funds and has accessed available federal funds to make infrastructure improvements to road beds, track, bridges, and rail-highway grade crossings. Responsibilities regarding bridge maintenance have recently increased, which will result in added demands placed on the maintenance program. In 2010, FRA announced new rules that require railroad track owners (like NHDOT) to implement bridge management programs that include at least annual inspections of railroad bridges, identify the safe load capacity of bridges; and conduct special inspections if the weather or other conditions warrant such inspections. The inspection program for the state-owned railroad bridges will need to be enhanced in order to comply with the new rule.

Develop Industrial Rail Access Program

As supported by the rail stakeholder interviews, there is potential for incremental rail traffic growth in New Hampshire. Many of the specific opportunities for rail growth identified through discussions with shippers and receivers during development of the rail plan will require some level of public investment in infrastructure to realize the benefits. It is also likely that these improvements have the potential to attract new rail business. These site-specific improvements could be funded through an Industrial Rail Access Program (IRAP). Since the “last mile” of rail operations can determine success or failure, particularly in light density conditions, an IRAP program would assess the specific public benefits of any opportunity as well as determine the specific characteristics of each opportunity and potential sources of funding.

Recommendation: Initiate program to provide financial support (in partnership with shippers/railroads) for infrastructure improvements that increase rail access.

Many states have programs that combine public, private and railroad funds to facilitate the increased use of the rail system. These programs generally provide funding assistance for the construction or improvement of railroad tracks and facilities to serve industrial or commercial sites, such as rail spurs or sidings. A funding program can allow financial assistance to localities, businesses and/or industries seeking to provide freight rail service. Industrial Rail Access Programs are in place in Maine, Vermont, and New York. Massachusetts currently has a program that limits grants to public entities, but is in the process of expanding opportunities to railroads, rail customers or other private businesses. These programs are typically funded at levels less than \$5 million/year and require significant matching funds, such as Vermont’s program, which requires a 33 percent match from the railroad and a 33 percent match from the shipper.

Program requirements should include a competitive grant process with at least 50 percent matching funds (some combination of shipper and railroad funding), and projects should demonstrate quantitative and qualitative economic benefits, such as job creation and retention, and increased state/local tax revenue from the benefiting businesses.

An Industrial Rail Access Program could be used in efforts across the state to support small businesses through reducing their transportation costs. Examples of how this type of program could be used include: assisting a business in the North Country build a new siding track to provide direct rail access to the facility, or reinstalling a switch to an existing siding in southern New Hampshire to assist a business



reestablish the use of rail transportation. A program like this would help decrease the high capital costs that it takes a business to initiate freight rail service.

New England Regional Coordination

Recommendation: Participate in regional coordination efforts to plan and improve the New England railroad network

During the past five years there has been unprecedented coordination among the New England states. The creation of the Vision for High Speed and Intercity Rail in New England was an important advancement for the New England rail network. This vision was established through the cooperation of the Departments of Transportation in each of the New England states and New York in response to the interstate nature of the rail network in New England and to Congress's appropriation of \$8 billion for high-speed and intercity passenger rail within the American Recovery and Reinvestment Act of 2009. The coordination that made that vision possible should continue, including support for grants from neighboring states for rail upgrades. This support could take forms similar to the letter of support New Hampshire recently sent to the US Secretary of Transportation in support of the Massachusetts/Connecticut TIGER program application for improvements to the Connecticut River line.

Regional coordination efforts will be necessary at multiple levels. The Coalition of Northeastern Governors (CONEG) has effectively coordinated the states in the past around various issues (including rail and transit) and can continue to do so. It may also be appropriate for a more focused group of state rail managers to coordinate activities on a regular basis.

Preserve Rail Lines

Recommendation: Continue policy of acquiring abandoned rail lines with potential for future use

The State owns 404 miles of rail corridors. These corridors were purchased over the years to avoid complete abandonment. Rail corridors are difficult to replicate once they are abandoned and disassembled through sale or reversion back to adjacent land owners. Some state owned corridors are leased to railroads for continued rail operation while others are preserved as trails for recreational purposes.

NHDOT has committed to a policy of preserving New Hampshire's abandoned railroad corridors that have potential for possible active rail use or other transportation use in the future. This policy of rail line evaluation and acquisition where appropriate should continue, so the state can keep important transportation assets well into the future.

Recommendation: Ensure that state-owned abandoned rail rights-of-way are available for future railroad use

Many of the state owned corridors are owned by NHDOT but managed by NH DRED. This arrangement allows DRED, the agency that manages trails, to supervise the recreational uses of these corridors. The two agencies have a cooperative agreement that identifies the roles and responsibilities of each. This arrangement allows the corridors to be used as trails, while maintaining the rights to restore rail service if it is ever warranted.

It is recommended that NHDOT take steps to ensure that corridors are available for future rail use as needed. This should include clear language in trail agreements reserving the right to restore rail service and protecting corridors from encroachments or intrusions by permanent structures or restrictions. The 2005 State Trails Plan includes guidelines for the corridor ownership, management, and maintenance for these corridors.



Guidelines

- The State of New Hampshire should work to ensure that the state-owned abandoned rail corridors are reserved for current and future transportation and recreation uses. These uses may include multi-use trail functions as well as future rail service. In order to achieve this, the state-owned corridors should not be sold off to abutters: the State should retain ownership.
- NHDOT should continue to allow the abandoned railroad corridors to be managed by DRED (through a cooperative agreement) for recreational use when there is no present need for transportation use. NHDOT and DRED should continue to coordinate on planning, design, and usage issues for these corridors where there is a cooperative agreement.
- The NHDOT should remain involved in trail planning for the abandoned rail corridors. For those corridors where there is a cooperative agreement between NHDOT and DRED, and the latter agency provides recreational management, any proposed improvements by a Town will be reviewed with the DRED Trails Bureau. The Trails Bureau will review the proposal for consistency with Statewide Trails program, and a supplemental agreement would be executed between the Town and both state agencies.⁶⁴

The above guidelines are focused on the joint NHDOT and DRED management approach regarding recreational use of state-owned rail corridors. To provide additional assistance in assessing the viability of state-owned rail lines for future transportation use, it is recommended that the guidelines be expanded to include the following consideration:

- In determining the relative importance of inactive rail lines for future transportation use, a higher value should be placed on rail lines that are part of a connecting corridor, while a lower priority should be placed on branch line segments.
- Connecting corridors should be defined as having the potential to support through-traffic movements.

Examples of inactive connecting corridors include the combined rail line segments that extend from Ossipee to Conway and from Whitefield to St Johnsbury, VT. These rail segments provide the only potential direct north to south rail connection within the state. The Hampton Branch is another example of a connecting corridor that should be maintained for future transportation use. The Hampton Branch is part of the connecting corridor between Portsmouth and Newburyport, MA. The inactive line from Concord to Lebanon/White River Junction, VT should also be considered a connecting corridor.

- Branch lines should be defined as rail segments that have only one connection point. Evaluation for future transportation use of each branch line segment should be made based on an individual assessment of the potential utility of the rail line that includes viability of commercial land uses surrounding or adjacent to the line.

The current list of rail lines indentified for future rail use and those that are deemed to be best used for recreational purposes are presented in Figure 2-3. As the economic and logistic aspects of transportation can change rather quickly, it is suggested that the state undertake a review of the inactive state owned rail lines annually to update the importance and status of each inactive rail line segment.

⁶⁴ New Hampshire State Trails Plan



Rail Program System Monitoring/Planning

In Chapter 5, several attributes of the national rail network were described that are anticipated to change in the coming decade, with possible impacts on the way the New Hampshire rail system functions. These included the widening of the Panama Canal, potential shortages of truck drivers and the volatility of fuel prices. Each one of these may result in changes to the rail network that, if responded to correctly, could result in improvements to the New Hampshire economy.

An example of recent changes to freight rail service in Albany, NY that has occurred recently is related to the oil reserves in Northern Alberta. This example serves to demonstrate the potential for change, even though this specific example has not impacted New Hampshire, yet.

“Technology has made oil reserves in Bakken (North Dakota) and Northern Alberta economical to recover and producers are now facing a pipeline capacity problem. The unit train rail model gives them a reliable and cost-effective transportation option. In fact, the rapid growth of this industry has a Wild West feel... Outbound unit train volumes are growing faster than we (Canadian Pacific) anticipated and are averaging two to three per week. Just a few weeks ago our first train of crude oil moved to Albany, New York. Traffic has already grown from 8,000 carloads to 13,000 carloads. There is a potential of 50,000 to 70,000 per year of this commodity, principally Bakken crude going to Vancouver and U.S. destinations”.⁶⁵

As demonstrated from the quote above, at times there are changes that occur nationally and globally that could impact the operations of the rail system in New Hampshire. It is important to be aware of the changes and for New Hampshire businesses to be ready and able to respond to the changes

Recommendation: Continue NHDOT program of rail system monitoring and planning to identify ways to best leverage railroad assets for the state

It is recommended that NHDOT continue to support a rail program and staff that can respond to the changes in the industry and carry out actions that are beneficial to the operation of the state’s rail network. The following are some areas that are important rail-related responsibilities of NHDOT.

- **Identify/support federal funding programs** - As identified throughout the Rail Plan Recommendations, there are federal grant programs that require the development of grant applications. These grant applications have the potential to result in funding for improvement to the state rail system. Many new federal funding programs require the development of applications so that states/projects compete for grants and are awarded based on the demonstrated potential benefits, instead of “formula” programs that at one time were more prevalent.
- **Work with shippers to identify and plan for network needs** - In order to identify potential funding programs, it is important to have the capacity to identify the needs of shippers, railroads and the system as a whole.
- **Respond to system crises** - There are times when major crises or issues need to be addressed. Unfortunately the state just experienced one of those crises in the form of Tropical Storm Irene. In addition to responding to major road closures, NHDOT worked with the railroads and oversaw the repair the state-owned lines so that the tourist railroads could be back in operation prior to the leaf-peeper season. State engineering staff are needed to protect the state-owned railroad resources.

⁶⁵ Comments from Tracy Robinson, Canadian Pacific, Vice-President, at the New England Railroad Club, Nov. 3, 2011.



- Advocate for federal policies that benefit the regional and New Hampshire rail system - NHDOT can advocate for federal policies that are in the best interest of the New Hampshire rail system. For example, federal agencies often weigh input received from states when making changes to rules and regulations, such as the pending changes to the Federal Transit Administration New Starts/Small Starts grant program rules that may impact federal financial support for commuter rail.

Establish Shipper Training/Support by State Officials

Recommendation: Initiate program to provide information to shippers on how to utilize rail services

There is a general lack of understanding on the use of rail services from a shipper's point of view. This limits consideration of rail by existing businesses in the state and those contemplating locating in the state. It is therefore recommended that NHDOT and NHDRED work with local railroads to develop information regarding the rail shipping process and what to evaluate when considering using rail transportation. This material can be made available to potential rail users that may make inquiries regarding transportation services to New Hampshire state and regional agencies. The material should identify specific rail opportunities in each area of the state and provide railroad contact information to allow of subsequent follow up by the prospective rail users.

6.2 Passenger Rail System Recommendations

The recommendations associated with passenger rail were developed based on the priorities for passenger service presented in Section 5.2.2, Passenger Rail Trends. The three priorities are:

1. Maintain existing passenger rail services,
2. Consider expansion of services along the New Hampshire Capitol Corridor and the line from Haverhill, MA to Plaistow, NH, and
3. All other potential passenger rail corridors in the state.

Existing Services

Recommendation: Identify approaches to assist with implementation of Service Development Plans for the Downeaster and Vermonter.

In 2011 the Northern New England Passenger Rail Authority (NNEPRA) received a \$600,000 grant from the FRA to complete a Service Development Plan (SDP). The goal of an SDP is to identify 20 year goals for a service corridor and the steps necessary to achieve the goals. The Downeaster SDP has three primary components:

- Identify the capital improvements required to meet the goals of increasing frequency and reducing travel time, and the associated impacts those improvements will have Downeaster service, and on other current and planned passenger and freight operations.
- Evaluate the challenges and opportunities associated with the current Portland Transportation Center and make recommendations for improvements.
- Further explore expansion of Downeaster service to the Lewiston/Auburn area

NNEPRA hopes the SDP can be developed collaboratively and serve as the foundation of a regional plan to improve rail transportation along the corridor in Maine, New Hampshire and Massachusetts.



The development of the plan will provide the opportunity for NHDOT and New Hampshire communities to participate in shaping the future of the service. In addition to participating in plan development, it is recommended that New Hampshire identify ways to contribute to the support for the existing or future service that benefits New Hampshire residents. Potential opportunities to support the service include the following:

- Initial support for future operational improvements: Operational changes that improve service to New Hampshire communities could be supported by New Hampshire through the allocation of new or expanded federal funds for the service. For example, New Hampshire funds from the Congestion Mitigation and Air Quality Program could be used for the first three years of expanded transit operations.
- Investment in infrastructure in New Hampshire: There may be improvements to infrastructure in New Hampshire that can advance the plans for the corridor. These improvements could include additional tracks, bridge improvements or station area improvements, such as additional parking at Exeter Station. Providing financial support for capital improvements could be beneficial to the future of the service.
- Investments within the corridor outside of New Hampshire that provide benefits to New Hampshire riders: There may be capital investments located outside of New Hampshire that benefit New Hampshire riders, such as the purchase of additional coaches, or track upgrades in Massachusetts that improve travel times between Boston and New Hampshire.

In 2009 the Pioneer Valley Planning Commission completed the Knowledge Corridor Passenger Rail Feasibility Study. This effort evaluated opportunities to improve passenger rail service along a portion of the Amtrak Vermonter corridor. The study identified three improvement scenarios that would enhance service along to corridor, two of which would improve service to New Hampshire area stations.

Funding has been secured for one scenario, the realignment of the Vermonter route to travel through Northampton and Greenfield, MA. FRA granted MassDOT \$70 million through the ARRA High-Speed and Intercity Passenger Rail program. Construction is anticipated to be completed in 2013.

The other scenario that would provide benefits to New Hampshire included enhancing intercity service by adding a second round trip between New Haven, CT and White River Junction, VT. The study identified a strong public return on investment would result from implementation of this scenario. The steps necessary to advance this scenario will become clearer upon completion of the following activities.

- Completion of improvements along the Connecticut River Line in Vermont, improving train speeds along a portion of the Vermonter corridor,
- Implementation of the New Haven-Hartford-Springfield Passenger Rail Project, adding additional passenger rail service along a portion of the Vermonter corridor,
- Implementation of the Restore Vermonter project, realigning the route of Vermonter through Northampton, MA, and
- Completion of the Inland Route and Boston to Montreal High Speed Rail Study, studying improvements to the Vermonter corridor and the connecting corridor between Springfield and Boston, MA.

These activities are all anticipated to be completed by 2016. Upon completion, benefits of enhanced Vermonter intercity service will be better understood, as well as the actions necessary to implement enhanced service. Service development plans for the Vermonter corridor will be revised with the completion of each project. It is recommended that NHDOT and New Hampshire communities participate in advocating for completion of the activities identified above, either through support or



active participation as appropriate, and identify ways to assist with the implementation of service development plans for the corridor.

Shared Freight/Passenger Corridors

Recommendation: Support grants to fund improvements to shared freight/passenger corridors

In recent years there have been multiple opportunities for federal grants to fund improvements along either passenger or freight rail corridors. These include the TIGER Grant Program, the High Speed and Intercity Passenger Rail Program, and the Rail Line Relocation and Improvement Capital Grant Program.

The Transportation Investment Generating Economic Recovery (TIGER) Grant Program was included in the American Recovery and Reinvestment Act of 2009 to spur innovative, multi-modal and multi-jurisdictional transportation projects. The projects selected for funding have varied between rail, road, transit and port projects, but they have all identified exemplary benefits in terms of project delivery or project cost, or have clearly demonstrated benefits to community livability and sustainability.

Locally, the \$43 million Merrimack River bridge project is being partially funded through the TIGER program. This project will repair and reconstruct three bridges that provide an integral connection along the Downeaster Corridor. The bridges carry two railroad tracks over the Merrimack River in Haverhill, MA, that serve MBTA Commuter Rail, the Amtrak Downeaster, and Pan Am Railways freight service.

High Speed – Intercity Passenger Rail Program – The focus of this Federal Railroad Administration program is to build a network of passenger rail services to connect communities and economic centers across the country. In addition to multiple grants for planning activities in New England, there have been significant grants to fund construction activities. The projects include: New Haven-Hartford-Springfield Rail Project (\$160 million), Kingston and Providence station and track improvements (\$28 million), Vermonter corridor track improvements (\$52.7 million), and Downeaster extension to Brunswick (\$38 million).

Rail Line Relocation and Improvement Capital Grant Program - This Federal Railroad Administration program funds projects that reduce the adverse effects of rail infrastructure on safety, motor vehicle and pedestrian traffic, community quality of life, or economic development. This program requires a match of 10 percent from the state or other local sponsor. From 2008 to 2010, New Hampshire has received a total of \$1.667 million in grant awards through this program for track improvements in Coos County. These grants have helped to upgrade track along the St. Lawrence & Atlantic Railroad.

Transit Supportive Land Use

Recommendation: Encourage Transit Oriented Development

While passenger rail service is not available in either Manchester or Nashua, both communities have been investigating transit-oriented development opportunities, should service be initiated. In Manchester, there is significant interest in economic development near the likely Manchester rail station site, and a Market Basket grocery store is already being built in the area. Other development plans for commercial and residential use are also being considered. According to some of these plans, more than 200,000 square feet of retail and commercial space could be developed if rail service to Manchester were to be initiated. Nearly 100 residential units could also be built. The City of Nashua is pursuing transit-oriented economic development plans as well. The City has already evaluated sites for three rail stations. One would be in South Nashua, a second along East Hollis Street, and a third to the north of Nashua. The rationale for the south and north stations is the abundance of parking, but the East Hollis Street station is located downtown and offers some transit-oriented development opportunities. Since Transit Oriented Development is a way to maximize the effectiveness and efficiencies of rail or transit service, promotion of planning, zoning, and infrastructure to support development should be an integral part of



any passenger rail study or implementation. Any activities that can be undertaken by municipalities in advance of passenger rail service to develop station areas to support transit are recommended. Activities could include master plans, parking facilities/planning, pedestrian facilities, and land use control or zoning changes that would encourage appropriate development.

Tourist/Excursion Services

Recommendation: Support Tourist/Excursion Rail Services

Continued support by the state through railroad maintenance activities will help to maintain these important services and perhaps even expand or initiate new tourist railroad services.

Passenger System Expansion Opportunities

Recommendation: Implement recommendations of studies of the New Hampshire Capitol Corridor

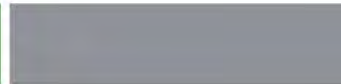
The New Hampshire Department of Transportation was successful in obtaining funding, including both FTA and FRA grants totaling about \$4 million, to complete the required alternatives analysis and planning processes to develop passenger rail service in the New Hampshire Capitol Corridor. These studies will be necessary to obtain further federal funding for the actual construction and implementation of such a service.

Recommendation: Implement recommendations of pending study of the Plaistow Commuter Rail Extension

Funding was approved to complete engineering for the development of a new station and a storage/layover facility for MBTA commuter rail trains in Plaistow to support extension of service. The upcoming study will assess alternatives, estimate ridership, identify environmental and community impacts, and develop designs and cost estimates necessary for project implementation. In addition, the study will provide estimates and recommendations regarding funding requirements and options, and will identify the necessary agreements between the Federal Transit Administration, the State of New Hampshire, the Commonwealth of Massachusetts, and the Town of Plaistow.



New Hampshire State Rail Plan





7. INVESTMENT STRATEGIES

This chapter presents evaluations of the investment strategies developed based on the recommendations presented in the previous chapter. The evaluations identify the potential effectiveness of advancing projects related to the recommendations through the use of benefit-cost ratios that compare the types of benefits that could be realized against the potential project costs. In some cases, the recommendations consist of only a project concept and therefore specific details are not available to conduct a full assessment of benefits and costs. In these cases, a qualitative assessment of a conceptual project was provided.

This section begins with the presentation of the evaluation criteria, benefits categories and methodology used in the evaluation. This is followed by the identification of specific projects that have been evaluated, and the chapter concludes with details for each example project and a summary of the benefits and costs.

Table 7-1 Projects Evaluated as Investment Scenarios

Recommendation Category	Proposed Project
Promote Reduction of Carload Weight Restrictions	Improvements to St. Lawrence and Atlantic Line
Promote Investment in Branch Lines	Improvements to the Conway Branch
Eliminate Vertical Clearance Constraints	Clearance improvements to Pan Am Railways main line
Develop Industrial Rail Access Program	Example of assumed typical project that would be eligible for consideration in an Industrial Rail Access Program
Promote Development of Freight Distribution Areas	Advance plans for development of freight intermodal facility in southern New Hampshire
Passenger Rail Operations	Operation of Amtrak Downeaster Service through New Hampshire

7.1 Evaluation Criteria

For the evaluations, inputs and assumptions were utilized from multiple data sources including transportation and economic models, existing study results of planned infrastructure investments, and leading expert and stakeholder guidance.

For the benefit-cost analyses, a discount rate was utilized to reflect the basic understanding that, in general, people attach less value to outcomes that occur in the future than in the present. In other words, discounting relates to the idea that, even with zero inflation, the value attached to \$1 received one year from now is typically less than the value attached to \$1 received today. Discounting reflects a general preference for fewer benefits if they are achieved immediately, as opposed to more benefits if they are only realized in the future. A discount rate of five percent was chosen for the benefit-cost analyses in this Rail Plan, which is considered a reasonable representation of the likely return on competing investments.

For the first four of the six scenarios considered, a full benefit-cost analysis was conducted, capturing economic, transportation and environmental benefits and costs from 2012 to 2035. A consistent set of costs and benefits are estimated for each scenario. Costs include initial capital investments, along with lifecycle operating and maintenance costs over the useful life of the investment. Benefits are focused on



direct travel efficiency and cost savings, as well as secondary benefits to environmental emissions, safety, and infrastructure conditions. These benefit and cost categories are consistent with federal guidelines for benefit-cost analysis.

For the fifth scenario, which is a proposed intermodal facility, a qualitative assessment was made. Specific information was not available, but the viability of this type of investment was discussed by stakeholders throughout development of the Rail Plan. As a result, it was deemed appropriate to consider this hypothetical investment as part of the Rail Plan.

The final scenario considers the benefits and costs associated with a single year of Downeaster service to the state, in order to provide a better perspective of the current value of the service to New Hampshire. The purpose of this scenario is to compare the annual benefits that accrue in the state with the annual costs that are incurred in the state to facilitate service. No proposed investment is considered; rather, an estimate and evaluation of one year of benefits and costs is provided, based on existing ridership and other data.

The benefits and costs of any of the potential passenger rail projects in the state were not estimated because project specific data is not yet available to facilitate the analysis. Required data includes project costs, details of operating plans, and any phasing plans for the projects. However, since data is available for the existing Amtrak Downeaster service, a single year estimation of New Hampshire-based benefits and costs was developed to provide context for the types of benefits that can be achieved through passenger rail service in New Hampshire.

7.1.1 Development of Freight and Passenger Rail Evaluation Criteria

The following are descriptions of the benefit categories utilized in the scenario analyses. These categories are consistent with recent federal grant program applications.

Economic benefits include:

Freight Rail

- Shipper cost savings that result from shifts to less expensive per ton mile modes (e.g., truck to rail) and/or improved service on existing routes;
- Congestion relief benefits to freight trucking as highways are improved or freight traffic volumes are diverted to other modes; and
- Freight logistics benefits that result from improved reliability of travel times and supply chain logistics re-organization benefits for freight-dependent businesses.

Passenger Rail

- Travel time savings for those automobile drivers who choose to utilize passenger rail and benefit from improved reliability of travel times; and
- Travel time savings to those drivers who continue to drive their automobiles as a result of reduced traffic on the highways and a reduction in travel time.

Transportation benefits include:

Freight Rail

- Congestion relief benefits for autos with highway improvements or freight traffic volumes diversion to other modes;



- Highway maintenance costs reduced with greater freight volumes traveling by rail; and
- Safety benefits from reduced accidents for scenarios with less truck VMT.

Passenger Rail

- Congestion relief benefits to existing drivers as some drivers choose to utilize the expanded passenger rail service;
- Highway maintenance costs reduced as some automobile drivers choose to travel by rail and no longer use the highways; and
- Safety benefits from reduced accidents when automobile VMT is reduced.

Environmental benefits include:

Freight Rail

- Emissions benefits to the environment if freight is diverted from truck to rail, producing fewer emissions per ton mile and greenhouse gases.

Passenger Rail

- Emissions benefits to the environment if traffic is reduced as drivers divert to passenger rail and emissions per ton mile are reduced, along with greenhouse gases.

7.1.2 Application of Evaluation Criteria to Proposed Projects

The following are the example projects that were analyzed. The selected projects are consistent with the recommended actions included in the previous section of Rail Plan. The first two are actual projects for which grant funds have been requested. The next three are potential projects that could be implemented to support the associated type of rail investment. The last project is the evaluation of the annual benefits of the Amtrak Downeaster to New Hampshire.

- Promote Reduction of Carload Weight Restrictions – Improvements to St. Lawrence and Atlantic Line
- Promote Investment in Branch Lines – Improvements to the Conway Branch
- Eliminate vertical clearance constraints – Clearance improvements to Pan Am Railways main line
- Develop Industrial Rail Access Program – Example of assumed typical project that would be eligible for consideration in an Industrial Rail Access Program
- Promote Development of Freight Distribution Areas - Advance plans for development of freight intermodal facility in southern New Hampshire
- Passenger Rail Service Operations – Operation of Amtrak Downeaster Service through New Hampshire



7.2 Freight Rail Investment Scenarios

The first two freight rail investment scenarios evaluated involve projects for which federal funding has been sought through the competitive Transportation Investment Generating Economic Recovery (TIGER) program in previous years. The full benefit-cost analyses of the proposed improvements for these scenarios were developed as part of the TIGER applications and are the basis for the analyses presented below. NHDOT recently submitted a new application to the TIGER 2012 program for the Saint Lawrence and Atlantic railroad project.

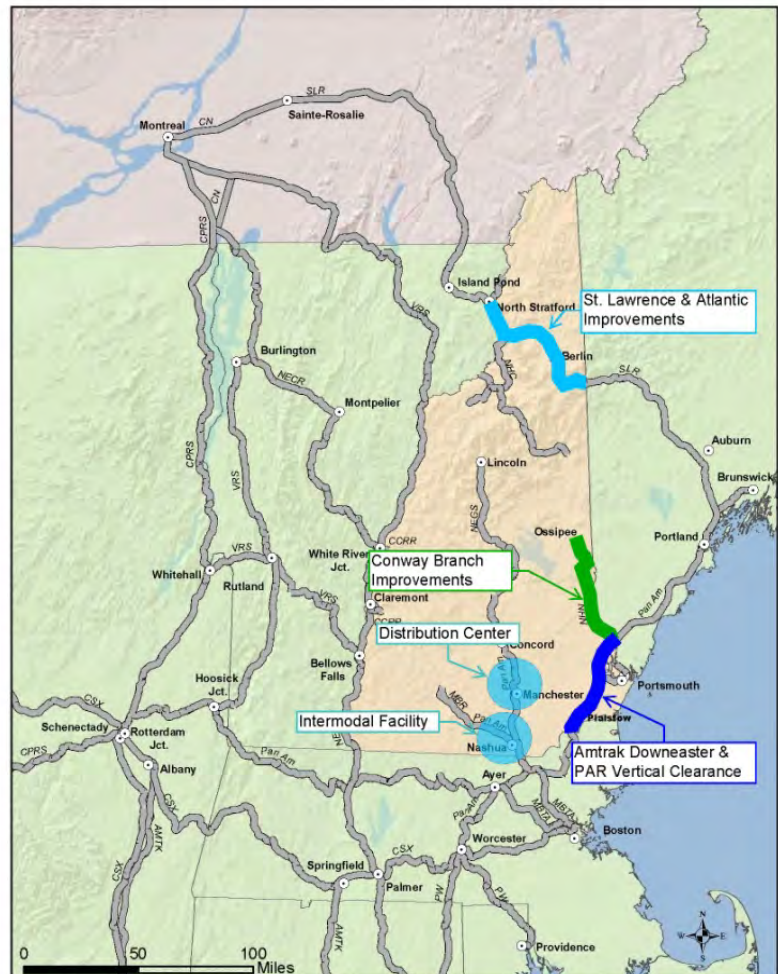
The third scenario contemplates the construction of a hypothetical siding that is typical of projects funded through state Industrial Rail Access Programs. The facility would be capable of handling bulk material for distribution, including building products, bagged agricultural products, wood pellets and other bulk freight. It is assumed that the rail siding would serve a distribution facility located in southern New Hampshire.

The fourth freight rail scenario considers the benefits and costs of a hypothetical investment that would eliminate vertical clearance restrictions on the Pan Am Railways (PAR) main line through New Hampshire. The project would be a continuation of clearance improvements connecting Massachusetts, and points west, through to New Hampshire and Maine. It is in large part based on the experience of other freight rail lines in the United States that have worked to eliminate regional vertical clearance restrictions and accommodate shipments by rail of double stack containers.

7.2.1 Improvements to the St. Lawrence and Atlantic

The St. Lawrence and Atlantic Railroad operates through the North Country, providing service to Berlin, Gorham, Groveton and other New Hampshire communities. SLR directly connects to the Port of Portland, ME, and facilitates connections from New Hampshire to the Ports of Vancouver/Prince Rupert on the west coast, New Orleans/Mobile on the gulf coast, and Halifax, NS on the Canadian east coast through alliance routings with Canadian National Railway. Through this alliance, direct access to and

Figure 7-1: New Hampshire Rail Plan Potential Investment Scenario Locations





from a number of key Canadian markets, as well as longer-distance international destinations in Mexico, is provided.

The investment considered in this scenario would replace 20.6 miles of rail with continuously welded, control-cooled rail that allows for 286,000-pound rail cars, thus completing a rail corridor project that began a decade ago. The project would also improve rail corridor connectivity through the unrestricted movement of fully loaded rail cars to the national and international rail network. The improvements could support redevelopment of inactive industrial sites in the region, especially in Groveton, Gorham, and Berlin, which is where SLR once served freight rail customers. Furthermore, the major North Country industrial sector employers in the paper, lumber and steel industries could benefit through the improvement to the regional transportation system.

Evaluation of Benefits and Costs

The improvements to the St. Lawrence & Atlantic are expected to cost \$12.5 million and take two years to construct. Material and labor cost estimates were developed by SLR and NHDOT for the 17-mile section of track in New Hampshire and 3.6-mile section in Vermont. Maintenance costs are estimated to be \$177,408 annually for a total of \$7.3 million over the period from 2015 to 2044, based on conversations with NHDOT and the railroad.

It is estimated this investment would increase annual rail carload volumes by 4.5 percent, a response to the anticipated diversion of freight from truck to rail generated by the proposed improvement. These 8,540 carloads per year represent a reduction of 42,000 annual average truck trips. In addition, the freight diversion would reduce highway accidents and congestion, and would reduce highway maintenance costs⁶⁶.

Because of this diversion to rail, it is anticipated that the investment would spur a reduction in overall vehicle miles traveled (VMT) by trucks. This results in a decrease in highway wear and tear and the number of accidents. Congestion and emission reduction benefits are also expected to accrue. Although not explicitly quantified, another benefit of the project would be the ability to move hazardous materials by rail, rather than transporting this material by truck on local roads.

If the improvements are made, the total public and private benefits that would result from the rail upgrade project are significant⁶⁷. It is estimated that total benefits of \$107.4 million could be generated over 30 years. When compared to costs of less than \$20 million, a strong return on investment is anticipated. Freight logistics are represented as a negative benefit as the rail trip takes longer than truck routes, however, the total benefits outweighs the additional time for shipments to arrive. The benefits associated with this project are presented below.

⁶⁶ Highway maintenance savings of \$0.09 per avoided truck mile are based on FHWA cost allocation study.

⁶⁷ The TIGER 2012 program stipulates the use of a seven percent discount rate in benefit-cost analyses. Using the 7 percent discount rate this project has a benefit-cost ratio of 1.7 in the TIGER 2012 application.



Table 7-1: Estimated Annual Transportation Benefits (\$Millions) – SLR Improvements

BENEFITS	Millions of 2012\$
Emissions Benefits	\$0.5
Shipper Cost Savings	\$46.7
Freight Inventory Costs	(\$1.6)
Congestion Relief	\$16.4
Accidents	\$16.5
Highway Maintenance Savings	\$28.9
TOTAL BENEFITS	\$107.4
Present Value of Total Benefits	\$35.1
COSTS	
Maintenance Costs	\$7.3
Capital Costs	\$12.5
TOTAL COSTS	\$19.8
Present Value of Total Costs	\$14.8
Net Present Value (NPV)	\$20.3
Benefit-Cost Ratio (BCR)	2.4

7.2.2 Improvements to the Conway Branch

The condition of ties, surface and ballast on the Conway Branch has limited the ability of the New Hampshire Northcoast Railroad to operate its freight service to capacity and expand freight service. The investment considered in this scenario would upgrade, repair and make improvements to the track infrastructure including tie replacement, new ballast, resurfacing, and two grade crossings. It would allow the track infrastructure to handle 286,000-pound rail cars and meet existing service demand, as well as any increases in demand by current and potential new customers.

The line currently provides freight service to a large sand and gravel operation in Ossipee, NH, transporting these materials to transload facilities in Rochester, NH, and Boston, MA. It also serves propane distribution facilities along the rail line and mixed freight to other shippers. The rail corridor connects with Pan Am Railways in Rollinsford, NH, and in Ossipee to an inactive rail corridor owned by the state of New Hampshire. Present volume on the line is just under 4,000 rail cars per year and without improvements carloads would likely be restricted to 4,000 annually. Improvements are anticipated to eliminate restrictions so the line would have the capacity to accommodate up to 12,500 rail cars per year. The growth estimate for the line includes both generation of new business and an increase in current business.

Evaluation of Benefits and Costs

The improvements to the Conway Branch are expected to cost \$2.3 million, based on information provided by the New Hampshire Northcoast Railroad. In addition, it is assumed that annual operating costs for the first ten years will be \$90,000. For years 10 through 20, the costs increase to \$120,000 and then after 20 years increase to \$150,000 annually.



For the analysis, it is assumed that a portion of freight currently traveling between Ossipee, NH, and Everett MA, Rollinsford NH, Rochester NH, Fryeburg ME, Boston MA, and points in New York would be available for diversion to rail. It is assumed that freight rail along this corridor will grow by an average annual rate of 2.2 percent, based on the Federal Reserve’s gross domestic product growth forecast. These improvements are estimated to increase the number of carloads on the New Hampshire Northcoast by an average of 3,680 carloads per year.

Under this scenario, shipper cost savings account for the largest share of benefits, \$28.4 million, out of the nearly \$46 million in total transportation benefits estimated. Highway maintenance savings and congestion relief comprise \$6.8 and \$6.4 million of the total benefits, respectively. The net present value at a five percent discount rate is \$12.7 million with a benefit-cost ratio of 4.3. This means that for every dollar invested, \$4.30 in benefits is generated.

Table 7-2: Estimated Annual Transportation Benefits (\$Millions) – Improvements to Conway Branch

BENEFITS	Millions of 2012\$
Emissions Benefits	\$1.6
Shipper Cost Savings	\$28.4
Freight Inventory Costs	(\$0.2)
Congestion Relief	\$6.4
Accidents	\$2.8
Highway Maintenance Savings	\$6.8
TOTAL BENEFITS	\$45.8
Present Value of Total Benefits	\$16.6
COSTS	
Maintenance Costs	\$3.6
Capital Costs	\$2.3
TOTAL COSTS	\$5.9
Present Value of Total Costs	\$3.8
Net Present Value (NPV)	\$12.7
Benefit-Cost Ratio (BCR)	4.3

7.2.3 Distribution Facility – Example IRAP Project

As mentioned in other sections of the Rail Plan, an Industrial Rail Access Program (IRAP) would offer an opportunity to form public-private partnerships to fund rail investments. Other states have used IRAPs to help fund investments such as rail sidings and rail spurs that directly benefit existing or planned freight rail customers (typically industrial businesses). This scenario contemplates an investment that may be appropriate for an IRAP. Specifically, the proposed investment would result in the construction of a single siding and a switch to serve distributors of building products, wood pellets, salt, bagged agricultural products, and other bulk freight. The distribution facility is assumed to be located in southern New Hampshire and provide a rail option to transport freight for products from Worcester, MA, being delivered to the Merrimack area.



Evaluation of Benefits and Costs

The distribution facility would require a single siding with a manual switch. The switch is assumed to cost approximately \$150,000 and a three-car siding would cost \$60,000, for a total construction cost of \$210,000. In addition, it is assumed that an annual average of \$4,000 per year would be required to maintain the investment.

For the analysis, it is assumed that freight is currently traveling by truck from Worcester, MA, to areas of New Hampshire located within 10 miles of Merrimack. With the investment, this freight would be transported by rail to Merrimack, and then be moved by truck for the final 10 miles of delivery. Beginning in 2015, the facility is estimated to receive six carloads weekly (328 annual carloads) with each carload carrying 100 tons. Additionally, it was assumed freight would grow by five percent per year for the first 10 years of operations. Lastly, each diverted truck would carry 17 tons per trailer.

This diversion from truck to rail would generate emissions benefits, pavement maintenance savings, as well as other positive effects.

Table 7-3 presents the transportation benefits expected from this investment. As shown, total benefits of nearly \$6 million are anticipated. The largest category of benefits is the \$1.2 million in congestion relief due to reduced truck traffic, followed by the \$0.4 million reduction in emissions.

Because the capital and maintenance costs are relatively small at \$0.3 million, the benefits outweigh the costs with a benefit-cost ratio of 3.6.

IRAP supported projects are intended to enhance industrial development opportunities, in addition to providing transportation benefits through rail investment. These programs help stimulate economic development through new or expanded freight rail service and increased use of rail transportation. While economic development benefits were not estimated for this scenario, they are likely to be generated as the result of this rail investment.

Table 7-3: Estimated Annual Transportation Benefits (\$Millions) – Distribution Facility

BENEFITS	Millions of 2012\$
Emissions Benefits	\$0.4
Shipper Cost Savings	\$0.0
Freight Inventory Costs	\$0.0
Congestion Relief	\$1.2
Accidents	\$0.1
Highway Maintenance Savings	\$0.3
TOTAL BENEFITS	\$2.0
Present Value of Total Benefits	\$0.9
COSTS	
Maintenance Costs	\$0.1
Capital Costs	\$0.2
TOTAL COSTS	\$0.3
Present Value of Total Costs	\$0.2
Net Present Value (NPV)	\$0.7
Benefit-Cost Ratio (BCR)	3.6



7.2.4 Pan Am Railways Main line Vertical Clearance

Much of the state's rail infrastructure was built to accommodate rail cars with a height of 15 feet. Larger rail cars, including tri-level auto carriers and double-stack intermodal cars, have led to vertical height standard requirements of 20 feet and greater. The informal vertical clearance minimum standard for main lines handling intermodal traffic has become 20'-8", enough to accommodate a stacked pair of the tallest containers.

This scenario considers improved clearances in New Hampshire on the Pan Am Railways main line. The improvements are assumed to be made in conjunction with other regional improvements such as those currently anticipated in Massachusetts to improve clearances to the PAR connection at Ayer, MA. These improvements would enable more of the state's rail network to realize the efficiencies of double stack container shipments. Freight rail traffic would be expected to increase because of this investment and the ability of shippers to transport freight more cost effectively using double stack containers on rail.⁶⁸

Evaluation of Benefits and Costs

The Pan Am Railways Main line Vertical Clearance scenario is expected to cost \$5.6 million in direct capital costs. This estimate is based on the cost of similar clearance improvements on other New England rail corridors. Specifically, it is assumed that it costs an average of \$350,000 to make vertical clearance improvements to a bridge along the corridor and that most clearance improvements can be made through track undercutting and lowering.

Long-term maintenance of these facilities from 2018 through 2047 represents \$1.1 million, \$37,500 per year, scheduled to occur annually through 2047. The total cost associated with the elimination of the vertical clearance restriction along this corridor within New Hampshire is estimated to be \$6.7 million.

Since some companies will benefit from a shipping cost reduction, estimated to be approximately \$0.04 per ton mile, due to double stack shipment efficiencies, this scenario assumes a 15 percent increase in existing rail freight along the corridor resulting from the diversion of traffic from truck to rail.

Additionally, a cost savings was applied to existing containerized freight rail of \$0.02 per ton mile; it was assumed 25 percent of total freight was containerized.

Direct transportation benefits estimated in this scenario include approximately 104,000 additional tons of intermodal tonnage carried by rail. It should be noted that these benefits are expected to accrue to New Hampshire only if vertical clearance restrictions are eliminated in the region through completion of similar projects in Massachusetts and Maine.

In addition to cost savings to rail shippers, the diversion of truck shipments to rail reduces congestion on the highway and provides time savings to remaining trucks and cars on the highway. With more commercial traffic capacity and a reduction of congestion, the expected accident costs, emissions, and other associated costs are reduced. Decreasing levels of truck traffic also reduce highway maintenance costs and overall emissions.

For this scenario, the NPV is \$10.5 million over the forecast time period and the benefit-cost ratio is estimated to be 3.0. That means that each dollar of investment returns \$3 in benefit to the state, as well as shippers and receivers regionally and nationally. The largest category of benefits of \$29.6 million is related to reduced shipping costs through increased use of freight rail for goods movement. The second largest category is for accident reduction, \$4.8 million, which occur due to reduced truck traffic.

⁶⁸ According to FHWA's Freight Analysis Framework (FAF3), which does not include through traffic in the volume calculations, 47 percent of New Hampshire freight rail volumes originate in New Hampshire, 41 percent terminate in New Hampshire, and 12 percent originate and terminate in points within New Hampshire.



Table 7-4: Estimated Annual Transportation Benefits (\$Millions) – PAR Mainline Vertical Clearance Investment

BENEFITS	Millions of 2012\$
Emissions Benefits	\$0.8
Shipper Cost Savings	\$29.6
Freight Inventory Costs	\$0.0
Congestion Relief	\$0.8
Accidents	\$4.8
Highway Maintenance Savings	\$1.4
TOTAL BENEFITS	\$37.4
Present Value of Total Benefits	\$15.6
COSTS	
Maintenance Costs	\$1.1
Capital Costs	\$5.6
TOTAL COSTS	\$6.7
Present Value of Total Costs	\$5.2
Net Present Value (NPV)	\$10.5
Benefit-Cost Ratio (BCR)	3.0

7.3 Intermodal Facility Scenario – Developing an Intermodal Facility

Several intermodal facilities are within a local truck trip to New Hampshire businesses, although they are not located in the state, but in Worcester, MA, Ayer, MA, and Auburn, ME. Every point in New Hampshire is within the regional 250-mile service area of at least one of these facilities and many are within a local 100-mile trip.

The railroads and neighboring states have made considerable investments in these facilities. The PAS facility in Ayer has been expanded, and the Worcester intermodal terminal is currently being expanded. Once the Worcester terminal enhancements are complete, CSX will close its Boston terminal and combine the volume of both terminals at Worcester. The new terminal will have capacity to accept growing volume, but the projected regional freight growth may outpace this capacity and additional facilities could be required. The situation is similar at the PAS facility in Ayer, MA.

Given these constraints, there may be the eventual need to build an additional intermodal terminal or freight facility in eastern New England. This scenario considers the possibility of developing a freight intermodal facility in southern New Hampshire. The investment in this facility is dependent on other investments and assumes completion of the Massachusetts project to improve clearances to the PAR connection at Ayer, MA and completion of the clearances of the main line in New Hampshire as contemplated in the above Pan Am Railways main line vertical clearance scenario.

A specific estimation of benefits and costs associated with the proposed facility was not conducted because much of the data necessary to conduct a complete benefit-cost analysis is not readily available. A full analysis would require significant private sector information, likely of a proprietary nature. Rather, a qualitative discussion of the pros and cons of pursuing a strategy to develop such a facility is presented.



Evaluation

Freight facilities site selection is overwhelmingly made by the private sector, and development of an intermodal facility typically includes a private investment component often led by private freight railroads. The ability to access key markets or customers is a critical element in the decision to pursue facility development. The ease of highway access to the facility is also important in the site selection process. Changes to public highways can be a source of public investment for these types of projects. Some other factors likely to be considered by private investors when determining whether this type of investment should be pursued include the:

- Labor and workforce: There is an appropriate employee base to support an intermodal facility in New Hampshire, and the state's Department of Resources and Economic Development (DRED) has a job training program in place whereby the state pays 50 percent of any training of employees in New Hampshire businesses.
- Total cost environment: New Hampshire's relative low start-up cost in terms of land or facility acquisition and no sales tax; paired with low recurring costs such as transportation costs make the cost environment positive for businesses.
- Availability and cost of suitable facilities: There are sites located in Nashua and Merrimack, NH, that may be suitable for an intermodal facility.
- Utilities: Utility infrastructure in the area is generally available that would support this type of installation.
- Permitting and regulation: The permitting environment in New Hampshire is similar to other states in the region although state environmental impact assessments are not required in New Hampshire as they are in neighboring states for large infrastructure projects.
- Tax environment: New Hampshire has no income tax or sales tax. Although the state has business taxes, it still promotes a tax advantageous environment.
- Public sector assistance and incentives: In its business recruiting, the state does not typically offer incentives to businesses interested in locating in the state. DRED has indicated that residents and businesses often cite limited government as a key reason for locating in the state.
- Climate and natural hazards: The state's climate is generally compatible with activities at an intermodal facility.⁶⁹

If an intermodal facility is built in New Hampshire, it is expected that new jobs would be generated in the freight transportation sector, as well as supporting businesses. In addition, truck VMT in the state could be reduced due to greater use of rail corridors. Being careful to account for local truck trips in and out of an intermodal facility, potential public benefits can include reduced pavement maintenance costs, accident reductions, and other positive benefits of reduced truck VMT.

⁶⁹ National Cooperative Freight Research Program (NCFRP) Report 13, Freight Facility Location Selection: A Guide for Public Officials.



7.4 Passenger Rail Scenario – Amtrak Downeaster

The Amtrak Downeaster currently serves three passenger rail stations in the state: Durham, Dover and Exeter. In FY2011, 509,986 riders utilized the Downeaster service, while 203,146 of these riders began or ended their trip at a New Hampshire rail station.

Unlike other scenarios that evaluated multiyear conditions, the benefits and costs associated with a single year of Downeaster service to the state are estimated to provide a perspective of the current value of the service. The benefits estimates are not all-inclusive, but they provide some quantification of the value of Downeaster service to New Hampshire.

Evaluation of Benefits and Costs

Annual costs for all three New Hampshire Downeaster rail stations combined are estimated to be \$106,382 per year. This covers expenses related to basic utilities, snow removal, and each station's share of carrier liability insurance. As demonstrated below, this cost is relatively small when compared to the benefits that are generated by the availability of passenger rail service in the state.

Findings from the passenger survey conducted for the “Economic Benefits of the Amtrak Downeaster” study found that approximately 22 percent of interstate roundtrip passengers ending their trip in either Maine or New Hampshire would not have made their trips were it not for the Downeaster service. About 78 percent of passengers would have chosen other modes, such as automobile or bus, if the Downeaster were not available.⁷⁰

The FY2011 ridership estimates for each of the New Hampshire stations, combined with the assumption that 78 percent of Downeaster riders would still make their trip in the absence of passenger rail service, were used to generate benefits associated with Downeaster service in the state. Total transportation benefits are estimated to be nearly \$4.7 million per year. As shown in the table, the largest category of benefit is the reduced vehicle operating costs totaling \$3.9 million that the Downeaster provides as an alternative to people driving their automobiles. Other benefits include nearly \$500,000 in congestion relief and \$210,000 in accident reduction.

It is important to acknowledge that there is a trade-off with the convenience of driving versus taking the train. In non-peak periods, for example, driving may be faster than the train, particularly when you consider waiting times at the train stations. While the benefits generated by the Downeaster are intended to present a picture of the value provided by passenger rail service in the state, these trade-offs should be considered when interpreting the results.

⁷⁰ Amtrak Downeaster Final Report, Economic Benefits of Amtrak Downeaster Service, Prepared for: Maine Department of Transportation, February 2005.



Table 7-5: Estimated One-year Transportation Benefits (FY2011) – Amtrak Downeaster

NEW HAMPSHIRE BENEFITS	Millions of 2012\$
Emissions Benefits	\$0.10
Noise Reduction Benefit	\$0.01
Reduced Vehicle Operating Costs	\$4.47
Congestion Relief	\$0.55
Accidents	\$0.24
Highway Maintenance Savings	\$0.01
TOTAL BENEFITS	\$5.38
NEW HAMPSHIRE 2011 COSTS	
NH Station Maintenance Costs	\$0.10
TOTAL COSTS	\$0.10

The costs identified in this analysis are limited solely to those paid in New Hampshire for station maintenance and do not include funds paid by the State of Maine to continue operation of the service. The State of Maine typically uses a combination of funds available through the federal Congestion Mitigation and Air Quality program (temporarily available to Maine through special federal approval) and a state-imposed car rental tax. These funds cover the \$7.1 million in annual operational costs that are not covered through fares or other train revenues. If New Hampshire were to contribute toward this expense proportionally to its Downeaster mileage, the contribution of approximately \$2.9 million would still be substantially less than the benefits identified in the table.

In addition to transportation benefits, the Downeaster brings some visitors to the state who spend on retail items, food, lodging, amusements and local transportation. This contributes to state and local economies, generating jobs and worker income. Based on a report prepared for the Maine Department of Transportation, more than \$15 million in annual economic activities in Maine and New Hampshire can be attributed to the rail service. The economic activities include visitor spending, direct and indirect economic development, and are estimated to support more than 200 jobs and nearly \$5 million in wages.⁷¹

7.5 Investment Scenario Summary

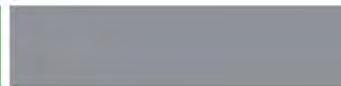
The investment scenarios evaluated in the Rail Plan strongly support investment in New Hampshire’s rail infrastructure. The investments needed for each scenario are expected to come from a variety of sources. Specific funding plans will need to be developed for each rail improvement project and will depend on all available funding sources at the time of project implementation.

All of the freight rail investments evaluated are expected to generate benefits that exceed costs, suggesting that the proposed investments are economically justifiable on benefit-cost grounds. The benefit-cost ratios for the freight rail projects ranged from 2.4 to 4.3, assuming a five percent discount rate. This indicates that a dollar invested in rail could generate between \$2.40 and \$4.30 in combined economic, environmental and transportation benefits. Further the one year benefit-cost analysis of the Amtrak Downeaster indicates that passenger rail provides a considerable value to the state.

⁷¹ Final Report Economic Benefits of Amtrak Downeaster Service, Prepared for: Maine Department of Transportation, February 2005.



New Hampshire State Rail Plan





8. RAIL FUNDING AND FINANCING

Throughout the Rail Plan there has been discussion of investments that could be progressed to improve the rail system in New Hampshire. Potential investments are envisioned to be a combination of public and private funds. The sources of funding and the level of public and private funding will vary for each specific opportunity.

For each opportunity there are typically funds associated with capital and operating costs. Capital costs are related to the new construction or improvement of associated infrastructure or equipment. Operating costs are typically associated with the annual costs of maintaining and running of a service. Additionally freight and passenger related projects have several potential funding options that can be sourced for either freight or passenger projects or for projects that have combined freight and passenger benefits and objectives.

The available funding options depend on the details of the specific project or financial railroad related need. This chapter provides an overview of potential sources, how they may be used, and examples of funding plans in other states.

Freight Rail Funding

The primary source of funding for freight rail operations and improvements across the nation is the private railroads and shippers that own and use the railroad. Most of the rail lines in the country, and New Hampshire, are owned, maintained and operated by private companies that fund and finance the improvements they need in order to serve their customers. However, the short line railroads sometimes have difficulty generating the revenue necessary to maintain their network and therefore may require some funding to continue to operate.

The rail system, unlike other transportation modes, does not have a dedicated federal funding source. Federal funding programs for rail are “discretionary” and awarded on a competitive, nationwide basis. No state or railroad is guaranteed to receive federal rail funding.

The following federal programs are those used most frequently to support freight rail improvements.

- Highway-Rail Crossing Program
- Rail Line Relocation and Capital Grant Program
- Railroad Rehabilitation and Improvement Financing Program
- Transportation Infrastructure Finance and Innovation Act

State of New Hampshire Rail Programs

Three state sources have been used in the past to support capital improvements on privately owned rail lines in New Hampshire. These are:

- The Rail Line Revolving Fund – A fund established with state bond funds in 1993 and augmented in 1997. The fund is used to provide 20 year loans to short line and cog railroads for capital improvements.
- The Special Railroad Fund - This revolving fund receives revenue generated through railroad leases and user fees and other sources and supports the maintenance and repair of state-owned rail lines.
- State Bonds – Funds from state bonds have been used for the purchase of abandoned rail lines and for other specific rail line capital improvements



Passenger Rail Funding

The nature of the passenger rail service determines its eligibility for federal funding. The U.S. Department of Transportation classifies passenger rail services as either:

- Commuter rail service, which is defined by the US DOT as: short-haul rail passenger transportation in metropolitan and suburban areas usually having reduced fare, multiple-ride, and commuter tickets and morning and evening peak period operations, or
- Intercity passenger rail service, which means rail passenger transportation, except commuter rail passenger transportation.

The primary source of federal funding assistance used to develop and initiate commuter rail service is the highly competitive FTA 5309 (New Starts) program. The Downeaster received FTA New Starts funding for the start-up of the service.

Until recently, there was no federal funding program to assist states with intercity passenger rail projects. In January 2008 the FRA announced a new Capital Assistance to States - Intercity Passenger Rail Service program that provided grants to states to support improvements for existing or expanded intercity passenger rail service. Since that time other funding has been made available through the American Recovery and Reinvestment Act of 2009 and the High Speed and Intercity Passenger Rail Program.

The difficulty in developing a passenger rail service is that it requires operating support in addition to the funding necessary for capital improvements. Operating costs for passenger rail service typically are paid through a combination of fare revenue and support from local or state sources. The one federal source for passenger rail operating funds is the Congestion Mitigation Air Quality (CMAQ) Program. Funds from this program can typically be used for the start-up costs associated with operations in the first three years.

8.1 Freight Rail Funding Approaches Of Other States

Many states throughout the country have established Industrial Access Programs. Through the construction of new sidings and business-oriented infrastructure improvements, these programs either leverage private funds or provide economic development assistance to expanding businesses in their state.

- **Maine:** The Industrial Rail Access Program (IRAP) in Maine provides 50 percent matching funds to private businesses for capital improvement projects relating to rail. These include upgrades to siding tracks, switches, turnouts and other rail infrastructure necessary for the movement of goods via rail.
- **Vermont:** The state's Infrastructure Bank offers loans at a 4 percent fixed rate for private companies (10-15 year amortization schedules), and a 2.5 percent fixed rate for municipalities is also available. Loans can be supplemented by state dollars and made available to shippers and carriers for rail line improvements.
- **Massachusetts:** MassDOT's Freight Rail Grant Program provides funding for infrastructure/capital investments that will provide a sustained public benefit. Examples of eligible projects include, construction of public intermodal freight facilities, safety improvements, and new rights-of way. It is similar to an IRAP program, such as Maine's, but restricts private companies from using public funds for improvements.
- **Minnesota:** As one of the larger preservation and improvement programs in the country, the Minnesota Rail Service Improvement Program consists of five components that draw funds



from the state general fund and general obligation bonds. One component provides low or no-interest loans for up to 70 percent of costs to railroads for the preservation and rehabilitation of rail lines.

- **Virginia:** The Rail Preservation Grant Program provides grants or loans for short line operations. Funds require 30 percent match and loans only available to large railroads.

8.2 Passenger Rail Operations Funding Approaches Of Other States

Commuter Rail

The primary federal source used by states for the initial capital funding of commuter rail projects is the Federal Transit Administration’s Section 5309 (New Starts) program. This program now typically requires at least 50 percent of a project be paid through another source, which could be federal, state or local funds. Generally states utilize some combination of transportation bond funds to provide the required local match. Once the service is operational, systems typically utilize FTA formula funds for capital projects.

In addition to the capital funding, FTA participation in the project requires that a 20 year operating plan be developed. Each operator has developed a different approach to securing operational funding. Funding approaches range from sales taxes or payroll tax to local assessments.

Table 8-1 provides a summary of the sources of operational and capital funding that are used in other states. This is provided as a demonstration of the variety of approaches that states use to identify both capital and operating funds.

Table 8-1: Transit Operating and Capital Funding Sources

CITY/METROPOLITAN REGION	SPONSORING AGENCY	SOURCES OF OPERATIONAL FUNDING	SOURCES OF CAPITAL FUNDING
Boston, MA	MBTA	1% state-wide sales tax, assessments on MBTA member cities and towns	Issuance of state transportation bonds, FTA formula funds and grants
New Haven-New London, CT	ConnDOT	ConnDOT operating subsidy	ConnDOT funding (1/3), FTA formula funds and grants (2/3)
New York City, NY			
1. Metro North	MTA	12-county MTA payroll-mobility tax, other property sales-related taxes, NY state operating aid	State, New York City and MTA sources, including FTA formula funds and grants
2. Long Island RR			
3. New Jersey Transit	NJT	NJDOT operating assistance, state and Federal "reimbursements"	NJDOT capital funding--State Trans. Trust Fund, FTA formula funds and grants
Philadelphia, PA	SEPTA	% of state sales tax from PA trust fund, assessments on SEPTA members, (i.e., City of Philadelphia and four surrounding counties), FTA preventative maintenance	Funds from PA Transportation Trust Fund, FTA formula funds and grants
Baltimore, MD-- Washington, DC	MTA	State Transportation Trust Fund	State Transportation Trust Fund, FTA formula funds and grants.



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Table 8-1: Examples Transit Operating and Capital Funding Sources (Continued)

CITY/METROPOLITAN REGION	SPONSORING AGENCY	SOURCES OF OPERATIONAL FUNDING	SOURCES OF CAPITAL FUNDING
No. Virginia--Washington, DC	VRE	State contrib. and assessments/grants to No. Va. and Potomac and Rappahannock Transportation Commissions	State and Federal formula funds/grants to the two rail commissions
Miami-Ft. Laud.-W. Palm Beach, FL	SFRTA	FDOT operating assistance, assessments from three SFRTA member counties, FTA preventative maintenance funding	FTA formula funding and grants, FDOT funding
Nashville, TN	RTA	Assessments to the RTA member communities, CMAQ funds	FTA funding and grants
Chicago, IL METRA	RTA	% of regional sales tax revenues,	Issuance of state transportation bonds, FTA formula funding and grants
Chicago, IL NICTD	NICTD	Indiana Public Mass Transportation Fund	Indiana Public Mass Transportation Fund
Dallas, TX Dallas-Fort Worth	DART	% of city/county sales tax	FTA formula funding and grants, state funding assistance
Dallas, TX Denton County	DCTA	% of city/county sales tax	FTA formula funding and grants, state funding assistance
Minneapolis-St. Paul, MN	MT	Motor Vehicle Sales Tax, Metropolitan Council funding assistance	FTA formula funding and grants, assistance from the Metropolitan Council (seven county metropolitan planning organization)
Salt Lake City, UT	UTA	% of sales tax	FTA formula funding and grants, sales tax revenues
Albuquerque, NM	MRCOG	CMAQ funding, state and local (MRCOG members) funding	FTA formula funding and grants, state funding assistance
Seattle, WA	CPSRTA	Sales and Use Tax, Motor Vehicle Excise Tax, Rental Car Tax	FTA formula funding and grants
Portland, OR	TriMet	Payroll tax, state and federal operating grants	FTA formula funding and grants
San-Francisco-San Jose, CA	PCJPB	operating subsidy from the three member counties,	FTA formula funds and grants
Stockton-San Jose, CA	SJRRC	1/2 cent San Joaquin County "Measure K" funding, Santa Clara and Alameda member county assessments, state operating assistance	FTA formula funding and grants, some Measure K funds can be used for capital
Los Angeles, CA	SCRRA	Assessments from the five member counties in SCRRA, state operating assistance	FTA formula funding and grants
San Diego, CA	NCTD	3/4 cent San Diego county sales tax measures, FTA preventative maintenance operating assistance, state operating assistance	FTA formula funding and grants



Intercity Rail

A study by the Virginia Department of Rail and Public Transportation in 2010 examined funding options for passenger rail services. Part of the study included a survey of how other states provide operating support to intercity passenger rail.

The report gathered information from nine states that provide state-supported intercity passenger rail service. Each state varied in its approach, while a few identified a dedicated revenue source, most include the cost in the statewide transportation or general fund budget.

The three states that have dedicated revenues are California, Oregon, and Pennsylvania.

- Oregon raises dedicated revenue through an additional assessment to the personalized license plate fee. Oregon also receives intercity passenger rail funds through non-dedicated gas tax revenues.
- California dedicated revenue is generated through taxes assessed on diesel fuel, gasoline, and a sales tax on a portion of the excise tax on gasoline.
- Pennsylvania dedicates a portion of its Transportation Fund Allocation.

The states that provide non-dedicated revenue vary in their approaches to providing funding, with some utilizing General Funds and others utilizing other transportation specific revenue sources. Table 8-2 summarizes the information collected for the Virginia study and augmented and updated for this Rail Plan.

Table 8-2: Examples Intercity Passenger Rail Funding Sources

State/Agency	Funding
California-CCJPA (Capitol Corridor Joint Powers Authority)	State sales tax on diesel fuel is the sole source of funds to support the California Capitol Corridor, San Joaquin and Pacific Surfliner routes operating and operating-related capital charges.
Illinois	Currently funded from state road fund.
Maine NNEPRA (Northern New England Passenger Rail Authority)	Capital and operating charges are paid by CMAQ and the STAR Account. The STAR account has various small funding sources. In 2008 the legislature passed a law which directed 50% of the car rental sales tax revenues in Maine into the STAR Account. Maine DOT and NNEPRA have an MOU stating that those funds are to be used to support the Downeaster and its expansion to Freeport and Brunswick.
Michigan	Up to ten percent of MI state registration fee and fuel tax can go to public transportation, which includes intercity passenger rail.
Missouri	Currently, MoDOT seeks General Revenue funding each year for the operation of the Missouri River Runner. Infrastructure projects along the line have been funded via through a combination of federal HSIPR program and Union Pacific funds, without a need for state funding. Missouri road and bridge funds are constitutionally apportioned directly to the Missouri Highways and Transportation Commission (a bipartisan group appointed by the Governor and confirmed by the Senate). These funds are not tied to the annual legislative process and restricted to road and bridge work. Everything else, including railroad funding, must be sought by MoDOT annually in the legislative session.
New York	New York has a dedicated transportation fund (funded by the state taxes on gasoline). A small portion of that funding stream is allocated to rail use (freight, passenger, operating & capital support), including subsidies for state-supported Amtrak services.
North Carolina	State Highway Funds, plus CMAQ for the mid-day frequency effective June 2010.



Table 8-2: Intercity Passenger Rail Funding Sources (Continued)

State/Agency	Funding
Pennsylvania	Pennsylvania provides support to the Amtrak Keystone service between Philadelphia and Harrisburg. For operating assistance state funds are used. For capital assistance Federal funds with matching state funds are used.
Texas	Texas does not have a dedicated source for rail service, but is typically included in bi-annual budget paid out of state highway fund. Presently rail operating funds have been appropriated for FY '12 and FY '13.
Vermont	All state dollars are used for operating support, typically transportation funds; capital is the same but it depends on federal match requirements for individual projects. Capital improvements are typically made with support through freight rail programs or public-private-partnerships.
Virginia	Virginia is investing over \$200 million in state and federal funds to add capacity between Washington and Richmond and to extend Amtrak regional service between Richmond and Norfolk by 2013. Some of the resources currently being invested have come from Virginia's Rail Enhancement Fund (a dedicated source for rail infrastructure that receives about \$21 million annually from the car rental fee), but has a 30 percent match requirement.
Washington State	State funding for the rail operating and capital program is the Multimodal Transportation Account. The revenue source for this fund comes from: Motor Vehicle Excise Tax; Retail Sales Tax (a surcharge on sales tax for car rentals; and motor vehicle licenses). Rail operating costs are all state funded. Currently 20 percent of the capital program is from state sources and 80 percent is from federal ARRA funds.
Wisconsin	WI currently uses a combination of state and federal highway funds for the operation of the Hiawatha Line service (See section 8.8, Traffic Mitigation). Starting in July 2012, rail operations will be funded entirely through state sources.

8.3 Existing Federal Funding Programs

8.3.1 Passenger Rail Investment and Improvement Act of 2008 (PRIIA)

This federal legislation, enacted in October 2008, represents the most sweeping congressional action on intercity passenger rail since the creation of the National Railroad Passenger Corporation (Amtrak) and the Northeast Corridor (NEC) Improvement Project during the 1970s. PRIIA reauthorized Amtrak and strengthened the US passenger rail network by modify the regulatory framework and providing funds to improve service, operations, and facilities.

PRIIA focused on: intercity passenger rail, including Amtrak's long-distance routes and the NEC; state-sponsored corridors throughout the nation; and the development of high-speed rail corridors. Specifically, PRIIA authorized three new federal intercity passenger rail capital programs:

- Intercity Passenger Rail Service Corridor Capital Assistance;
- High Speed Rail Corridor Development; and
- Congestion Relief.



Intercity Passenger Rail Service Corridor Capital Assistance Program

PRIIA established the Intercity Passenger Rail Service Corridor Capital Assistance Program⁷², a funding program that was first initiated in the 2008 appropriations bill. Grants made under this program are for capital investments benefiting intercity passenger rail service. Eligible applicants include states and the District of Columbia, groups of states, interstate compacts, and public agencies with responsibility for providing intercity passenger rail service established by one or more states. US DOT is authorized to use appropriated funds to make grants to assist in financing the capital costs of facilities, infrastructure, and equipment necessary to provide or improve intercity passenger rail operations.

High-Speed Rail Corridor Development

PRIIA authorized the appropriation of funds to US DOT to establish and implement a high-speed rail corridor development program [§501]. High-speed rail is defined as intercity rail passenger service that is reasonably expected to achieve operating speeds of at least 110 miles per hour. Eligible applicants include states, a group of states, interstate compacts, and public agencies established by one or more states with responsibility for high-speed rail or Amtrak service.

On October 11, 2000, US Department of Transportation Secretary Rodney Slater designated two new high-speed rail corridors and approved the extension of four corridors. The Northern New England corridor, linking Boston with (a) Portland/Auburn, ME, and (b) Montreal, QC, via New Hampshire and Vermont, was one of the corridors designated at that time.

On March 14, 2011, U.S. Transportation Secretary Ray LaHood announced the designation of the Northeast Corridor (NEC), which includes the existing NEC main rail line and any alternative routings for intercity passenger train service between the metropolitan areas of: Washington, D.C.; Philadelphia, PA; New York, NY; and Boston, MA. This makes the NEC the 11th high-speed rail corridor.

US DOT is authorized to specify grant application requirements, and PRIIA identifies a number of grant selection evaluation criteria, including that the project be part of a state rail plan, that the applicant have the ability to carry out the project, and that the project result in significant improvements to intercity rail passenger service. Grants may be used for capital projects, which are broadly defined to include typical activities in support of acquisition, construction, or improvement of rail structures and equipment.

Congestion Relief

PRIIA authorizes the appropriation of \$325 million to US DOT to make grants to states, or to Amtrak in cooperation with states, for financing the capital costs of facilities, infrastructure, and equipment for high priority rail corridor projects necessary to reduce congestion or facilitate ridership growth in intercity passenger rail transportation [§302]. Eligible projects would be those:

- Identified by Amtrak to reduce congestion or facilitate ridership growth in heavily traveled rail corridors;
- Identified by the Surface Transportation Board (STB) to improve on-time performance and reliability; and
- Designated by US DOT as meeting the purpose of the program and being sufficiently advanced that they are ready for implementation.

US DOT is authorized to establish appropriate grant eligibility, qualification and administrative conditions.

⁷² [§301]



8.3.2 Transportation Investment Generating Economic Recovery (TIGER)

Transportation Investment Generating Economic Recovery (TIGER) was the supplementary, discretionary \$1.5 billion grant program included in American Recovery Act and Reinvestment Act (ARRA). TIGER funds could be awarded to state and local governments, including U.S. territories, tribal governments, transit agencies, port authorities, metropolitan planning organizations, other political subdivisions of state or local governments, and multi-state or multi-jurisdictional applicants. Since its inception in 2009, the program has been extended three times with smaller amounts of funding made available through annual appropriations. \$600 million was available for TIGER II in 2010, \$526.944 million was available for the FY 2011 round and TIGER 2012 provided \$500 million. The 2012 grants are specifically for infrastructure investments that include:

- Passenger and freight rail transportation projects; and
- Certain highway or bridge projects;
- Public transportation projects, including those currently partially funded through the FTA New Starts or Small Starts programs;
- Port infrastructure investments, including projects that connect ports to other modes of transportation and improve the efficiency of freight movement.

For TIGER 2012, up to \$100 million was made available for high speed and intercity passenger rail projects. Grant applications were due March 19, 2012. It is unknown at this time whether future year federal appropriations will include funding for this program.

8.3.3 SAFETEA-LU

The Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU) is the most recent federal surface transportation authorization act, which continues many of the policies and programs that originated in prior legislation. SAFETEA-LU authorized the federal surface transportation programs for highways, highway safety and transit through September 30, 2009. Since then, it has been extended multiple times while the US Congress discusses a new authorization bill.

SAFETEA-LU enables states and Metropolitan Planning Organizations (MPOs) to use various federal funding programs for rail projects. Table 8-3 summarizes the SAFETEA-LU funding sources for rail projects with additional detail provided in the following sections.



Table 8-3: SAFETEA-LU Federal Funding Programs

Federal Funding Programs	Source	Type of Funding
Congestion Mitigation and Air Quality Improvement (CMAQ)	Jointly administered by Federal Highway Administration (FHWA) and the Federal Transit Administration (FTA)	Formula distribution to states based on population and air quality classification as designated by the Environmental Protection Agency (EPA)
Transportation Infrastructure Finance and Innovation Act (TIFIA)	US DOT – Appropriations	Federal Credit Assistance – Loans and Loan Guarantees
Railroad Rehabilitation and Improvement Financing (RRIF) Program	US DOT – Appropriations	Federal Credit Assistance – Loans and Loan Guarantees
Highway-Rail Crossing Program	Highway Trust Fund	Formula distribution to states
Rail Line Relocation and Improvement Capital Grant Program	Federal Railroad Administration (FRA) Appropriations	Grant program
Surface Transportation Program	May fund highway projects to accommodate rail operations	Formula distribution to states
Local Freight Assistance (LRFA)	(Not currently funded)	Grant and loan program
Projects of National and Regional Significance (PNRS) Program	Title 23 US Code Highway Trust Fund	Grant program
Freight Intermodal Distribution Pilot Grant Program	Federal Highway Administration (FHWA)	Grant program
5309 (New Starts) Program	Federal Transit Administration	Grant program
Transportation Enhancements Program	Federal Highway Administration	Formula distribution to states

Source: FHWA, “Financing Freight Improvements,” Washington, DC: US DOT January 2007

Congestion Mitigation and Air Quality Improvement (CMAQ)

The Congestion Mitigation and Air Quality (CMAQ) Improvement program provides funding for projects that reduce highway traffic congestion and help meet federal Clean Air Act requirements. CMAQ funding may be used for freight and passenger rail projects that accomplish CMAQ goals. Funding is available for projects in:

- Nonattainment areas defined as those areas that do not meet the National Ambient Air Quality Standards;
- Former nonattainment areas now in compliance, such as maintenance areas; and
- Projects outside air quality nonattainment areas where the air quality benefits of the project accrue to the non-attainment area or maintenance area.

CMAQ funds have been used to help fund the operations of passenger rail services, both commuter and intercity. For example, CMAQ funds have been used by Maine to fund operations of the Downeaster rail service.



Transportation Infrastructure Finance and Innovation Act (TIFIA)

TIFIA provides federal credit assistance in the form of direct loans, loan guarantees, and standby lines of credit to finance surface transportation projects of national and regional significance.⁷³ Projects that are eligible for these funds include:

- Rail projects involving the design and construction of intercity passenger rail facilities or the procurement of intercity passenger rail vehicles;
- Public or private freight rail facilities providing benefits to highway users;
- Intermodal freight transfer facilities;
- Access to freight facilities and service improvements, including capital investments for Intelligent Transportation Systems; and
- Port terminals, only when related to surface transportation infrastructure modifications to facilitate intermodal interchange, transfer, and access into and out of the port.⁷⁴

The USDOT's Transportation Infrastructure Finance and Innovation Act (TIFIA) administered by the FRA, authorizes \$10.6 billion in credit assistance on flexible terms in the form of secured loans, loan guarantees, and standby lines of credit. The TIFIA program was created in 1998 by the TEA-21 and amended by SAFETEA-LU.

TIFIA financial assistance is provided directly to public-private sponsors of surface transportation projects of national significance. The TIFIA credit program's fundamental goal is to leverage federal funds by attracting substantial private and other non-federal investment in critical improvements to the nation's surface transportation system. TIFIA can be used for both freight and passenger projects. A wide variety of intermodal and rail infrastructure projects, including High Speed Ground Transportation (HSGT), are eligible and can include equipment, facilities, track, bridges, yards, buildings and shops.

TIFIA credit assistance provides improved access to capital markets, flexible repayment terms, and potentially more favorable interest rates than in private capital markets for similar instruments. The interest rate for TIFIA loans is the U.S. Treasury rate and the debt must be repaid within 35 years. TIFIA can support up to 33 percent of a project's cost and is restricted to projects costing at least \$50 million. TIFIA can help advance qualified, large-scale projects which otherwise might be delayed or deferred because of size, complexity, or uncertainty over the timing of revenues.

TIFIA is not a funding source, but a method of financing projects through assisted borrowing. In the case of passenger projects, TIFIA financing is only workable where investment grade revenue and operating cost forecasts show the project has the potential to provide a substantial revenue stream after a significant public investment is typically made in infrastructure and/or equipment. Projects receiving TIFIA credit assistance must obtain an investment grade rating from at least one nationally recognized credit rating agency.

Railroad Rehabilitation and Investment Financing Program (RRIF)

This program, which is administered through FRA, enables US DOT to make direct loans and loan guarantees to railroads, state and local governments, government-sponsored authorities and corporations, joint ventures that include at least one railroad, and limited option freight shippers who intend to construct a new rail connection. The program provides applicants with the opportunity to acquire loans at very competitive rates, and they can take up to 25 years to repay. In addition, no state or

⁷³ <http://www.fhwa.dot.gov/ipd/tifial/>

⁷⁴ http://www.fhwa.dot.gov/ipd/pdfs/tifial/pg_chap3.pdf



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local matching funds are required. Eligible Rail Rehabilitation and Improvement Financing (RRIF) projects include:

- Acquisition, improvement or rehabilitation of intermodal or rail equipment or facilities (including tracks, components of tracks, bridges, yards, buildings and shops);
- Refinancing outstanding debt incurred for these purposes; or
- Development or establishment of new intermodal or railroad facilities.

Table 8-4 provides a listing of projects receiving RRIF funds between 2002 and 2011.

Table 8-4: Disbursement of RRIF Funds 2002-2011

Organization	Year	Amount
C&J Railroad	2011	\$56,204
Denver Union Station Project Authority	2010	\$155,000,000
Great Lakes Central Railroad	2010	\$17,000,000
Georgia & Florida Railways	2009	\$81,000,000
Permian Basin Railways, Inc	2009	\$64,400,000
Iowa Interstate Railroad	2009	\$31,000,000
Nashville and Eastern Railroad	2007	\$4,000,000
Nashville and Eastern Railroad	2007	\$600,000
Columbia Basin Railroad	2007	\$3,000,000
Great Western Railway	2007	\$4,030,000
Virginia Railway Express	2006	\$72,500,000
RJ Corman Railway	2006	\$11,768,274
RJ Corman Railway	2006	\$47,131,726
Dakota Minnesota & Eastern Railroad	2007	\$48,320,000
Iowa Northern Railroad	2007	\$25,500,000
Wheeling & Lake Erie Railway	2006	\$14,000,000
Iowa Interstate Railroad	2006	\$9,350,000
Great Smoky Mountains Railroad	2005	\$7,500,000
Riverport Railroad	2005	\$5,514,774
The Montreal Maine & Atlantic Railway	2005	\$34,000,000
Tex-Mex Railroad	2005	\$50,000,000
Iowa Interstate Railroad	2005	\$32,732,533
Stillwater Central Railroad	2004	\$4,675,250
Wheeling & Lake Erie Railway	2004	\$25,000,000
Arkansas & Missouri Railroad	2003	\$11,000,000
Nashville and Western Railroad	2003	\$2,300,000
Dakota Minnesota & Eastern Railroad	2004	\$233,601,000
Amtrak	2002	\$100,000,000
Mount Hood Railroad	2002	\$2,070,000

Source: FRA website, <http://www.fra.dot.gov/us/content/177>



When evaluating applications, priority consideration is given to projects that: enhance public safety and the environment; promote economic development and international competition; and preserve or enhance rail or intermodal service to small rural communities.⁷⁵ In addition, the program emphasizes investment in smaller railroads with the requirement that a significant portion of the loans be granted to non-Class I railroads.

Although the RRIF program does not require state or local matching funds, the loans do require payment of a “Credit Risk Premium.” This non-refundable payment is to mitigate the risk of default to the federal government, so that the cost of the default risk is borne by the applicant. The premium is calculated based on the non-payment risk and is calculated as a percentage of the loan amount, which typically ranges between two and eight percent. In addition, collateral must be put up to secure the loan, which is often difficult for short line railroads since their capital assets are typically already leveraged for other financial purposes.

Highway-Rail Crossing Program

The Highway-Rail Crossing Program was authorized under SAFETEA-LU and allocates funds to the states for their use in eliminating hazards at public highway-railroad grade crossings. To access funds, states determine which public crossings need improvements and they determine what those improvements will be. These grade crossing funds are available at a 90-percent federal share. The remaining 10 percent is paid by state or local government and/or the railroad. Some projects may receive 100 percent federal funding. They include projects involving: signing; pavement markings; active warning devices; the elimination of hazards; and crossing closures.

Rail Line Relocation and Improvement Capital Grant Program

Congress authorized Section 9002 of SAFETEA-LU at \$350 million per year for the purpose of funding a grant program to provide financial assistance for local rail line relocation and improvement projects. Under this program, a state is eligible for an FRA grant for any construction project that will improve the route or structure of a rail line and:

- Involves a lateral or vertical relocation of any portion of the rail line; or
- Will mitigate the adverse effects of rail traffic on safety, motor vehicle traffic flow, community quality of life, or economic development.

Prior to 2011, the program had both competitive and non-competitive (i.e., earmarked) funds available, although in 2011, the last year funds were appropriated for the program, the program did not include any non-competitive funds

Table 8-5: Funding Appropriation and Award of Rail Line Relocation and Improvement Program

Federal Fiscal Year	Total Amount Appropriated (\$Millions)	Congressionally Directed Awards (\$Millions)	Competitive Awards (\$Millions)
2008	\$20.40	\$5.14	\$14.90
2009	\$25.00	\$17.10	\$7.90
2010	\$34.53	\$24.52	\$10.01
2011	\$10.53	N/A	\$16.89

Note: The FY '11 Awards included appropriation authority from previous years.

⁷⁵ Electronic Code of Federal Regulations, <http://ecfr.gpoaccess.gov/cgi/t/text/text-idx?c=ecfr;rgn=div5;view=text;node=49%3A4.1.1.1.39;idno=49;cc=ecfr#49:4.1.1.1.39.1.126.3>



States or other eligible entities are required to pay at least 10 percent of the cost of the project. The state or FRA may also seek financial contributions from private entities benefiting from the rail line relocation or improvement project.

Surface Transportation Program

Surface Transportation Program (STP) funds may be used for highway improvements to accommodate rail line operations, such as clearances and grade separations, as well as for railroad relocations and consolidations, intermodal terminals and the acquisition of abandoned railroad ROWs. STP funds are often used by states to supplement the Section 130 grade crossing funds. The federal matching share for these funds is 80 percent.

Projects of National and Regional Significance

The Projects of National and Regional Significance program provides funding for high cost projects that are of national or regional importance. Freight railroad projects that are eligible for assistance under 23 USC and have a total eligible cost greater than or equal to the lesser of:

- \$500,000,000 or
- 75 percent of the amount of federal highway funds apportioned to the state in which the project is located for the most recently completed fiscal year.

Freight Intermodal Distribution Pilot Grant Program

The Freight Intermodal Distribution Pilot Grant Program provides funding for intermodal projects that relieve congestion, improve transportation safety, facilitate international trade, and encourage public-private partnerships. There are a total of six projects receiving funds through this program in five states: Oregon, Georgia, California, Alaska, and North Carolina. There is generally a 20 percent non-federal match required.

FTA New Starts and Small Starts Programs

FTA's New Starts program is funded by the Highway Trust Fund and is highly competitive. It is focused solely on transit investments and has been used primarily for light-rail, bus rapid transit and heavy rail subway projects. To a lesser extent, it can be applied for commuter rail projects. This program has demands far exceeding its budget and a lengthy and detailed application process.

The program has been augmented with new program criteria for "Small Starts" and "Very Small Starts" to encourage a broader diversity of projects, though that may benefit bus projects more than rail. The New Starts program provides federal funds on a matching basis (80/20 by law, 50/50 in practice) to support transit "guideway" capital investments, including commuter rail. FTA evaluates projects based upon established criteria that include cost-effectiveness, local financial commitment and transit supported land use. FTA is in the process of revising the New Starts program evaluation criteria to consider placing increased emphasis on economic development and a broader range of evaluation criteria beyond cost effectiveness

Transportation Enhancements Program

This program supports nontraditional transportation-related improvements. For rail, program funds can be used to support the rehabilitation and operation of historic transportation buildings and other structures, as well as the acquisition of abandoned railroad corridors. The federal share of project costs for this program is 80 percent.⁷⁶

⁷⁶ Federal Highway Administration



8.4 Rail Safety Improvement Act of 2008

The Rail Safety Improvement Act of 2008 authorizes appropriations for FY 2009 through FY 2013 for railroad safety projects. Specifically, \$1.6 billion was provided for rail safety in FY 2009 through FY 2013. Another \$250 million was authorized for “Railroad Safety Technology Grants.” All grants and funds require a 20 percent state match, but priority is given to projects that seek less than the full 80 percent.

The law requires Class I, intercity, and commuter railroads to develop safety programs. For projects to be eligible, they must be included in a state’s rail plan. It provides Railroad Safety Infrastructure improvement grants for eligible railroads, states, and local governments, and five percent of the funds are reserved for projects of less than \$2 million.

8.5 Short Line Railroads Tax Credit

The American Jobs Creation Act of 2004 included a provision to provide tax credits to help regional and short line railroads fund their infrastructure projects. The tax credit will provide small railroads a tax credit of 50 cents for every dollar of qualifying track maintenance expenditures, such as costs to improve track, bridges and signals. The tax credit was established for a three-year period starting in 2005 and is capped by the number of miles owned or leased (by a Class II or Class III railroad) multiplied by \$3,500 for each of the three years.

The tax credit was extended through 2009 and legislation has been introduced to extend this tax credit program through 2017, and to increase the credit cap to \$4,500 per mile. This program is oriented to freight operations, but it may support improvements on shared use corridors, which would also benefit passenger rail.

8.6 Traffic Mitigation

Traffic mitigation programs associated with federally funded highway projects can be used to support passenger rail operations in particular cases under the Work Zone Safety and Mobility Rule (23 CFR 630 Subpart J). Intercity passenger rail service may be considered as a traffic congestion mitigation measure, in cases where it is a cost-effective component of a project Transportation Management Plan. This funding option is most applicable to major multi-year highway improvement projects on high-volume interstate highways where passenger rail service operates in parallel to the highway corridor. The federal cost share can be up to 90 percent when the service mitigates congestion on the interstate highway. This program has been used by Wisconsin to support the Amtrak Hiawatha service.

8.7 Economic Development Administration Programs

The Economic Development Administration (EDA) of the Department of Commerce administers two project grants programs, Grants to Public Works and Economic Development Facilities and Economic Adjustment Assistance, intended, respectively, to promote long-term economic development in areas experiencing substantial economic distress, and to assist states and local interests with strategies to bring about a change in the economy, focusing on areas under serious economic damage.⁷⁷ Rail corridor improvements in Coralville, Iowa, which use flood-proof construction and provide higher surface

⁷⁷ Economic Development Administration



elevations, are examples of the types of rail projects EDA will consider funding. This project was intended to protect area businesses from future floods.⁷⁸

8.8 Community Facilities Program

The Community Facilities Program is a program through the US Department of Agriculture. It provides loans, loan guarantees, and grants for water and environmental projects, as well as community facilities projects. Water and environmental projects include water systems, waste systems, solid waste, and storm drainage facilities. Community facilities projects develop essential community facilities for public use in rural areas and may include hospitals, fire protection, safety, as well as many other community-based initiatives.⁷⁹

8.9 Existing New Hampshire Programs for Funding Rail

8.9.1 Rail Line Revolving Loan Fund (RSA 228:66)

In 1993, the Rail Line Revolving Loan Fund was established with state bond funds and funded with additional money in 1997. Total funding was \$4 million. Loans through the fund are issued for up to 20 years for capital improvements to short line railroads. Projects have included:

- St. Lawrence & Atlantic Railroad track improvements
- New Hampshire Northcoast (heavier weight rail, bridge redecking, car repair shop, rehabilitation of three locomotives)
- Green Mountain Railroad (construction of an intermodal fuel facility)
- Mt. Washington Cog Railway (partial rebuilding of four coaches, fabrication of cog racks, rehabilitation of trestle piers)
- Plymouth and Lincoln Railroad (purchase and rehabilitation of locomotive and purchase of rail-mounted backhoe for track maintenance).

A redistribution of repaid loan principal is anticipated in 2012.

8.9.2 Special Railroad Fund (RSA 228:68, 228:69)

The Special Railroad Fund provides that income from state-owned rail lines, as well as 25 percent of the revenue received from the state railroad tax, be deposited in a dedicated fund and used for maintenance and repair of state-owned rail lines. This fund is comprised of roughly \$160,000 in annual user fees, paid by the railroads, and lease and other payments of approximately \$90,000 per year paid by other entities using railroad property.

These funds have been used to:

- Purchase ties and other materials for the active state-owned lines;
- Repair and inspect bridges;
- Clean ditches, remove brush and spray weeds.

The operating railroads are also required to maintain lines at their own expense with total expenditures required based on a percentage of their revenues.

⁷⁸ <http://www.eda.gov/NewsEvents/PressReleases/PRCoralvilleIO081709.xml>

⁷⁹ http://www.rurdev.usda.gov/HCF_CF.html



8.9.3 State Capital Budget

The New Hampshire legislature enacts a capital budget every two years to provide funding for major long-term capital investments. The capital budget includes funding for a wide range of capital investments, such as new or rehabilitated state buildings and transportation improvements. As owner of railroad property, the state has included repairs to the state-owned lines in the capital budget in past years. Rail related items funded in the capital budget have included the upgrade of the Groveton Branch, bridge repairs, rail replacement, and other improvements on various rail lines.

8.10 Rail Funding Programs and Opportunities

8.10.1 Public Private Partnerships (PPP)

Twenty-six states have established enabling legislation and instituted policies and programs that encourage Public Private Partnerships (PPPs) to help leverage private investment in rail infrastructure. Generally, these partnerships involve private entities leasing public infrastructure, or joint investment in infrastructure, regardless of whether it is publicly or privately-owned.

There are a number of government funding programs that make public funds available to private railroads. Public investment, however, comes with restrictions and eligibility requirements. For example, they generally have to provide measurable economic benefits, require matching funds, and in the case of rail may require accommodation of additional passenger service.

Partnerships allow private and public entities to pool resources to make key infrastructure investments possible. Financing through public entities may allow for low interest loans that the private sector would not otherwise have access to, or key investments by both parties in land and rail infrastructure may improve access to intermodal/distribution facilities. Public Private Partnerships are possible to support freight rail projects, like the development an intermodal facility, or passenger rail projects, such as the joint development of a station.

The public sector has fairly limited experience with PPP arrangements and must be careful when defining contractual terms to ensure that private interests are not out-weighting those of the public. Currently, PPP agreements are not standardized and they vary between each project and program. Effective PPP should provide positive public and private benefits, and offer equitable cost sharing arrangements between the parties.⁸⁰

Currently there is no legislative authority within the State of New Hampshire to initiate Public Private Partnerships on transportation related projects. Utilizing this funding approach for rail would require legislative action to advance.

8.11 Infrastructure Banks

The National Highway System Designation Act of 1995 (Section 350) prompted the creation of State Infrastructure Banks (SIB) by allowing states to set aside up to 10 percent of their federal transportation funding for public-private investments. Thirty-four states (not including New Hampshire) have established SIBs. SIBs may offer loan and credit options to help finance infrastructure projects. Money

⁸⁰ "Devising an effective PPP Strategy – Point of View – Public Private Partnerships – Industry Overview" Railway Age, Resor and Blaze, Dec 2002. Urban Land Institute and Ernst & Young. Infrastructure 2011: A Strategic Priority. Washington, D.C.:Urban Land Institute, 2011. See especially pages 66-72.



for projects may be loaned at low rates to private investors or may serve as capital reserve for bond and debt financing. The loan may be repaid with revenues generated by the project.

This program may have limited applicability to passenger rail systems, except in cases of shared use with a freight operation. The program has been used in several states to seed revolving loan programs for private railroad improvement projects. This program could be an effective mechanism for public-private partnerships in New Hampshire, as the state would commit an initial amount of funding to create a revolving loan fund to seek out projects with a strong return on investment. The loan payback and interest earned by successful projects could then be used to fund future rail projects in the state. Since New Hampshire does not currently have a SIB, a bank and its initial funding would need to first be established by the legislature.

8.12 Transportation Development Credits (TDCs)

Transportation Development Credits (TDCs), also referred to as Toll Credits, are authorized by the Transportation Equity Act for the 21st Century and amended by the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU). In general, TDCs are a financing tool that allows entities to use federal obligation authority without the requirement of non-federal matching dollars. Credits are applied to the state's existing federal allocation for use in lieu of all or part of the required state match for projects. In other words, there are no new federal dollars allocated to the state.

The amount of TDCs a state can earn for any year is determined by the amount of toll revenue used by toll authorities for capital expenditures to build or improve public highway facilities that serve interstate travel. To qualify for the credit, the state's total non-federal transportation capital expenditures in the last year must equal or exceed the annual average of expenditures in the preceding three years, known as the Maintenance of Effort (MOE) calculation.

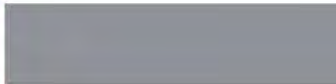
Toll revenues are derived from toll receipts, concession sales, right-of-way leases, interest earnings, or bond or loan proceeds that are backed by these revenue streams. State grants are not considered to be revenues generated and cannot be used in calculating earned TDCs. The toll facility that generates the TDCs must be open to public travel, and may be operated by a public, quasi-public, or private toll authority.

Capital expenditures are expenses for public highway facilities (including bridges, tunnels, and certain ferry systems) that serve interstate commerce. Expenditures for routine maintenance (e.g., snow removal, mowing), debt service, or costs of collecting tolls cannot be included. Expenditures from non-Federal sources are eligible for TDCs. Previously if a project involved any federal funding then none of the expenditures were eligible to earn TDCs. A recent change now allows partial TDCs to be earned for expenditures from non-federal sources even if the project includes some federal funds.

Credits are applied to the state's existing federal allocation and can be applied toward the non-federal matching share for most FHWA federal-aid highway projects (excluding emergency relief projects). They can also be used as the non-federal match for FTA funded capital transit projects, commuter rail projects, and even the state's match for Metropolitan Planning Organizations (MPOs). TDCs can be used in lieu of all or part of the required state match, allowing the state to obligate additional federal dollars to a specific project. TDCs are not authorized for Federal Railroad Administration funded projects and therefore intercity passenger rail projects are specifically excluded. Legislation enacted in 2012 in New Hampshire requires legislative approval for the use of toll credits on non-highway projects.



New Hampshire State Rail Plan





9. CONCLUSION

New Hampshire's active freight rail network remains an important component of the state's transportation system. The 58,000 annual rail carloads moved annually on the system equates to approximately 300,000 trucks that would otherwise be on New Hampshire highways. Rail service is essential to those industries that rely on it to deliver commodities such as bulk or hazardous cargoes economically. While freight rail volume has dropped by about 45 percent over the past decade, the state's rail system remains largely intact. So long as it remains available for rail use, it provides system capacity to handle forecasted freight growth, without sole dependency on highways. While it is unlikely that rail freight volumes will increase significantly in the short-term, it is important to take appropriate actions now to retain and stabilize the existing base volume while evaluating the long-term potential for increasing volume. There are industries that will locate or expand in New Hampshire only if there is an active, viable freight rail system.

Over 200,000 trips are made each year on Amtrak passenger rail services in New Hampshire. These trips provide improved access to jobs for employees and an alternative to driving on increasingly congested roadways, leading to a better quality of life for New Hampshire residents. Passenger rail service also supports the state tourism industry, aids student recruitment at UNH, and helps revitalize downtowns in rail-served communities. These and other benefits of passenger rail will grow more important in the future, and New Hampshire should take steps to retain and grow its passenger rail service.

The rail system provides important advantages for passenger travel and freight shipping needs. The Rail Plan has documented the benefits of freight and passenger rail. Effective, targeted investment in and management of this resource are essential to maintain the New Hampshire rail system as part of a complete, well-rounded transportation system. The recommendations presented in the State Rail Plan are aimed at realizing the greatest benefit from the rail system for the residents and businesses of New Hampshire.

