

Regional Rail Planning in New England

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A summary is given of how the New England states might work together to enhance rail freight service. The New England rail system is best examined in its entirety rather than as a set of what appear to be incomplete and disjoint systems when viewed from a state perspective. The amount of freight moving by rail in New England has declined steadily since the end of World War II, reflecting primarily the emergence of a competitive trucking industry and the shift to a service-oriented economy. The more than 7,700 route-km (4,800 route-mi) in New England were classified into five categories: regional main lines (29 percent), regional secondary lines (13 percent), major branch lines and connections to ports (5 percent), alternative connections to the national networks (13 percent), and other lines (40 percent). The first three categories can be considered the regional core network, which should be the primary focus for regional rail policy. From a regional perspective, the most important concern is the continued existence of an efficient, financially stable freight rail system. A regional focus will be helpful in dealing with interstate railroads that serve New England, in responding to national freight transportation issues, and in coordinating freight and passenger operations. Coordination with industrial development and environmental and energy policies is important. The fees assessed on and the access allowed for heavy combination trucks are also important factors in the diversion of rail traffic and important elements in state and regional rail policies. The New England states should produce and periodically update a regional rail plan that includes the following elements: objectives, description of the core rail system, summary of rail service, identification of industrial development sites, prioritization of potential improvements to the system, and discussion of major regulators and administrative issues. State rail representatives should continue to meet to discuss regional rail issues, exchange information, monitor rail service, coordinate rail policy, and supervise research.

If state governments want to take advantage of the environmental, energy, and other benefits of rail transportation, they will need to expand the scope of their rail planning processes. Although many states produce state rail plans, these documents tend to emphasize local issues, especially light-density lines, rather than the broader issues that will shape the rail systems of the future. A regional perspective is necessary to deal effectively with the major issues facing rail transportation, as illustrated in this study of the New England rail system. The major results of a study conducted for the New England Transportation Consortium (NETC) are summarized in this paper (1). The objective of the study was to identify strategies that states could pursue to promote the long-term health of the New England rail system and to identify its minimum core rail freight system.

A literature review focused on the factors leading to the decline of rail service in New England and the extent to which New England's experience differs from that of the rest of the nation. Visits were made to the state departments of transportation to discuss their state rail plans and the possible options for reversing or mitigating the effects of the decline. The interviews were supplemented by a survey of the railroads in the region.

It is necessary to justify the need for rail service before recommending policies for promoting rail service. Whereas railroads are fundamentally in business to provide profits for their owners, state governments have much broader concerns and a longer time perspective than railroads. Railroads take action to improve their profitability, whereas states take action to achieve net social benefits, which may affect environmental, safety, and equity concerns as well as economic ones. States can take actions favorable to railroads only if there is clear justification for doing so.

The fundamental reason for state governments to promote rail service is that railroads, in some cases, provide the most efficient mode of freight transportation, especially when the effects of heavy trucks on highways are taken into consideration. However, this does not mean that all rail service or all of the New England lines are equally important and in need of support. It was possible to identify the lines that have regional significance and distinguish them clearly from those that have only local significance. It was also possible to identify some intermediate categories of lines whose significance depends in part upon the strategies adopted by the states.

The final task was to identify the elements of a long-range plan to improve the region's rail system. The intent was to present options for the states to consider rather than to make specific recommendations concerning exactly which strategies should be followed.

OVERVIEW OF RAIL SERVICE IN NEW ENGLAND

Bounded by the Hudson River on the west and the main lines of the Canadian railroads on the east, the 29 New England railroads (Table 1) operate within a clearly defined region at the edge of the national transport network. According to the most recent state rail plans, there were just under 7,800 rail route-km (5,000 route-mi) in New England in 1991, reflecting a steady decline from the peak of nearly 13,000 route-km (8,000 route-mi) in the 1920s.

With four railroad subsidiaries—Boston & Maine (B&M), Maine Central (MEC), Portland Terminal Company, and Springfield Terminal Railway—the 1,200-mi Guilford Transportation Industries (GTI) network is the largest in the region, serving every New England state except Rhode Island.

Consolidated Rail Corporation (Conrail, CR) is the most important Class I railroad operating in New England. Although Conrail operates only in southern New England, the main line that runs from Boston to Selkirk provides gateway access to the national network for most of the other New England railroads. In addition, Conrail is the most important participant in intermodal operations.

The Bangor and Aroostook Railroad (BAR) is the largest railroad operating in Maine and one of three Class II railroads operating in New England. In addition to being critical to Maine's lumber and paper industries, the BAR lines are important to connecting railroads because of the presence of a steady traffic base.

The Providence and Worcester (PW) provides the only active freight connection from Rhode Island to the national network. The

TABLE 1 New England Railroads

Railroad Name	Type	States	1989 Carloads	NE Miles Operated*
Amtrak	Class I	CT MA RI	n/a	1048
Canadian National (CN)	Class I	VT	n/a	3(34)
Canadian Pacific (CP)	Class I	ME VT	n/a	292(292)
Consolidated Rail Corp. (CR)	Class I	CT MA	n/a	400
Bangor and Aroostook RR (BAR)	Regional (Class II)	ME	53,000	435(435)
Central Vermont Railway (CV)	Regional (Class II)	CT MA NH VT	34,903	425(425)
Guilford Transportation Industries (GTI)	Regional (Class II)	CT ME MA NH VT	n/a	1200
Providence and Worcester RR (PW)	Regional (Class II)	CT MA RI	40,045	233(354)
Bay Colony RR (BCLR)	Local	MA	2,500	102(105)
Belfast and Moosehead Lake RR (BML)	Local	ME	86	33
Claremont Concord Railway Corp. (CCRR)	Local	NH	517	4(4)
Clarendon and Pittsford RR (CLP)	Local	VT	n/a	23
Fore River Railway Company, Inc. (FRY)	Local	MA	537	0(2)
Green Mountain Railroad Corp. (GMRC)	Local	VT	2,071	50(50)
Grafton and Upton RR (GU)	Local	MA	247	15(15)
Lamoille Valley RR (LVRC)	Local	VT	137	98(121)
Maine Coast Railroad (MCR)	Local	ME	0	91
New England Southern RR Co, Inc. (NEGS)	Local	MA NH	1,937	51(77)
New Hampshire Northcoast Corp. (NHN)	Local	ME NH	4,400	31(31)
New Hampshire and Vermont RR Corp. (NHVT)	Local	NH	500	81(81)
Pioneer Valley Railroad (PVRR)	Local	MA	2,465	26(26)
St. Lawrence and Atlantic RR Co. (SLR)	Local	ME NH VT	8,864	164(165)
Vermont Railway (VTR)	Local	VT	8,512	129(129)
Aroostook Valley RR (AVL)	Switching and Terminal	ME	332	9(9)
Berlin Mills Railway (BMS)	Switching and Terminal	NH	3,703	10(11)
Massachusetts Central RR Corp. (MCER)	Switching and Terminal	MA	4,361	24(26)
Seaview Transportation Corp. (STC)	Switching and Terminal	RI	800	4(30)
Twin State Rail RR Company (TSRD)	Switching and Terminal	NH VT	720	0(28)
Washington County RR Corp. (WACR)	Switching and Terminal	VT	254	13(13)

*Includes state-owned mileage; numbers in parentheses include total miles of road operated (trackage rights).
Source: Profiles of U.S. Railroads -- 1990 Edition, Association of American Railroads

PW has interests in intermodal operations with recent investments in an intermodal facility in Worcester, Massachusetts, and a connection to the Port of Providence. The PW has freight operating rights to the Rhode Island section of Amtrak's Shore Line, but only for pickup and delivery.

The two Canadian railroads provide service to Quebec and the Maritime Provinces' connections as well as alternative routes west through Canada for northern New England. The recent purchase of the Delaware & Hudson (D&H) by Canadian Pacific (CP) Rail in December 1990 further strengthens the alternative route considerations. A subsidiary of CN North America, the Central Vermont Railway (CV) is an interstate railroad with operations in four states. The CV main line from New London to the Canadian border is used in the *Montrealer* passenger service that connects Washington, D.C., and Montreal.

Amtrak, the nation's primary passenger railroad, owns the Northeast Corridor rail line and thus provides the most direct link to New York City and points south and west from Boston, Worcester, and Springfield. Amtrak provides only a small package delivery system, and has little interest in providing or allowing other kinds of freight service on the corridor, although PW and CR do serve some industries.

Intermodal traffic is the most rapidly growing market segment for railroads in North America, with total volume setting a record every year since 1981 (2). Of the 19 piggyback facilities shown in Figure 1, 15 are on the major CR/GTI/BAR main lines, which closely parallel the Massachusetts Turnpike, Interstate 495, and Interstate 95.

As part of the study for NETC, traffic flows within New England were summarized using the complete 1 percent waybill sample for

1985. The records in the waybill sample include what are called "expanded" carloads and tons, which are estimates of the total flows represented by the 1 percent sample. Although traffic in the region has since declined, the patterns of traffic flows and commodity groups in 1985 were assumed to be representative of what does and what could move by rail in the 1990s.

The 525,000 carloads that originated or terminated in New England in 1985 can be divided into three major groups. Local traffic originates and terminates in New England and accounted for roughly 18.5 percent of the region's traffic. Forwarded traffic originates in New England and terminates outside of the region; it accounted for 22.1 percent of the region's traffic. Received traffic originates outside New England and terminates within the region. This category accounted for three-fifths of the region's rail traffic, reflecting the fact that New England imports much more from the rest of North America than it exports. Because of the geography of New England, there is very little overhead traffic. Of the New England states, Connecticut had by far the lowest rail traffic, with less than 3 percent of the total in each of the three major categories. Maine was by far the largest originator and terminator of local traffic, with more than half of the region's total. Massachusetts had more than half of the region's forwarded and received traffic, whereas Maine had a third of the forwarded traffic. Three-fourths of the forwarded rail traffic was destined to the northeastern part of the United States. Inbound traffic was not quite so concentrated, with two-thirds coming from the United States and Canada. The major commodities shipped to and from the New England states in 1985 are shown in Table 2. The importance of the forest products industry is noteworthy, as is the absence of coal.

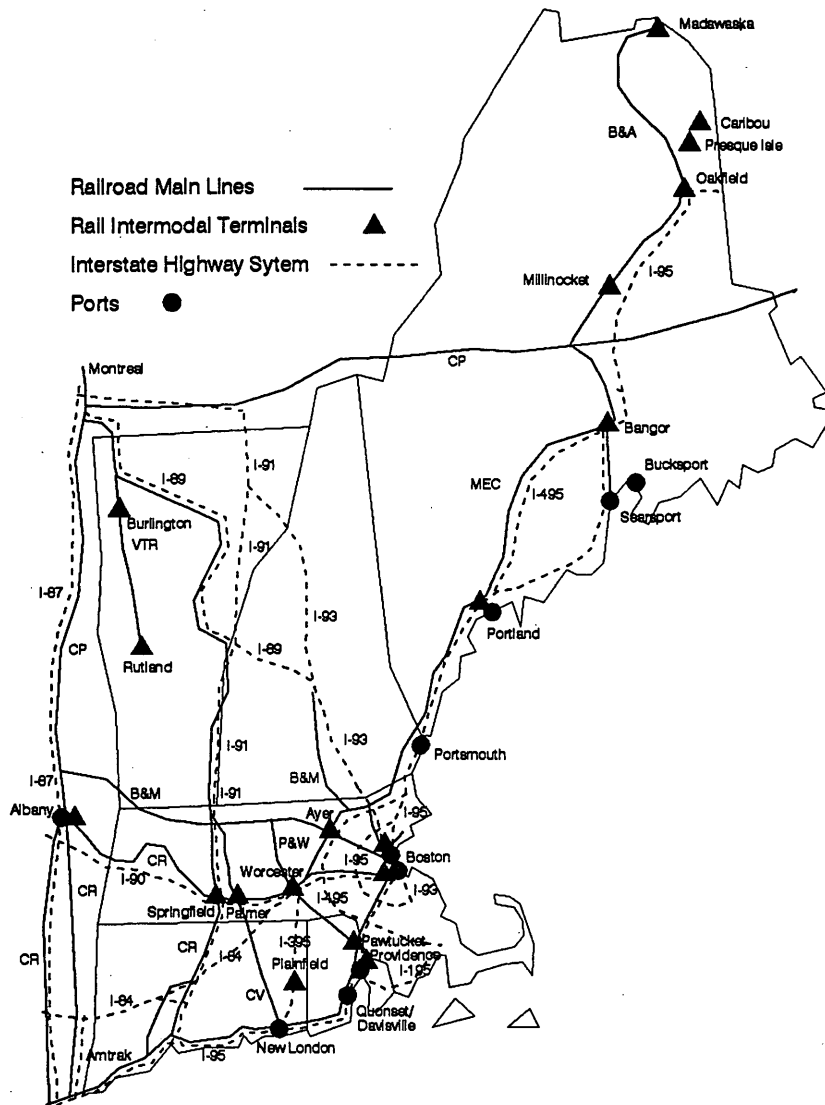


FIGURE 1 New England intermodal network.

CAUSES FOR DECLINE IN TRAFFIC

Specific rail problems of New England have been studied extensively (3-10). These studies provided the background for the following qualitative assessment of the region's rail problems. The basic reason for the decline in route miles and in rail operations is commonly believed to be the decline in freight traffic suited to rail. Industries that produce or consume low-value bulk commodities have given way to more service-oriented industries and to manufacturing industries that produce higher-valued, differentiated products. Also, traditional rail users, such as the coal, agriculture, and mining industries, are not well represented in the New England economy.

Deregulation of transportation greatly affected rail service by allowing railroads to decide where to provide service as well as how much to charge. Increased competition and cost-cutting measures led to rationalization and consolidation of the rail network. Dereg-

ulated motor carriers undertook aggressive campaigns to gain freight market share from rail.

As in the rest of North America, the response of the rail industry to the foregoing trends has been inadequate or delayed, especially in the areas of route rationalization, labor agreements, marketing initiatives, and innovative service offerings. Furthermore, the age and extent of the railroad network cause it to be a special burden to the region. In southern New England, there are 12 mi of railroad per 100 mi² more than twice the U.S. average.

A related factor has been the lack of a direct route between southern New England and points south and west because of the closing of the Poughkeepsie Bridge gateway in southern New York and Amtrak's reluctance to allow freight moves on the Northeast Corridor. The increased circuitry ultimately increases costs and makes truck more competitive in those areas. Routing traffic through Selkirk, New York, adds at least one day to transit time and, depending on the city, 92 to 246 mi to the trip length (11). Although

TABLE 2 Major Traffic Groups by Standard Transportation Commodity Code

STCC		% of Cars	% of Tons
26	Pulp and paper products	18.5%	20.4%
46	Intermodal	13.5%	4.0%
24	Lumber & wood products	12.7%	14.2%
49	Hazardous materials	9.5%	10.7%
20	Food products	8.0%	9.6%
37	Transportation equipment	7.8%	3.5%
32	Stone, clay, and glass	5.5%	9.3%
14	Non-metallic minerals	4.7%	8.0%
Total		80.2%	79.7%

poor clearances in New York City tunnels make the corridor impractical for some modern cars, specialized services could be operated to Long Island and to southern Connecticut.

The history of GTI, as described by Kitch (12), is very relevant to any study of the New England region. By consolidating the B&M and the Maine Central under a single holding company, GTI apparently took a major step toward eliminating the balkanization problem that had for so long hindered cooperative efforts to improve rail service in New England. However, during the course of the interviews conducted for this research, many people expressed concern about GTI's role in the New England rail system. Animosity that exist between GTI and the states or between GTI and other railroads appear to have hindered the quest to preserve a strong freight rail network. Shipper confidence in the GTI and in the rail industry has also been undermined by several major labor disputes in recent years, including several lengthy strikes.

The decline of the New England rail system is by no means unique. Railroads throughout the country and the world have suffered from declining market shares, financial problems, and the vicious circle of declining traffic, service cutbacks, service deterioration, and even greater loss of traffic. In many respects the root of the rail problem is the development of superior modes of transport that offer better service at a lower cost. Since shifting traffic to superior modes reduces costs or provides better service, consumers do not necessarily suffer from the decline in rail service. Whether the taxpayers suffer depends upon the extent to which the government is involved in financing the railroads and the competing modes. In some countries, financing the railroad deficit has been a major political concern at the national level.

OPPORTUNITIES FOR IMPROVING RAIL SERVICE

The best opportunities for improving rail service are those that provide significant cost reductions, help secure additional sources of traffic, or create more balanced public policy toward rail and truck transportation. Among the most needed changes are the following:

1. Continued rationalization of the network with an emphasis on consolidation of terminal facilities. The benefits of redeveloping urban rail facilities could justify substantial investment in a smaller number of more modern, better-located terminals.
2. Significant breakthroughs in rail labor agreements so as to minimize the artificial constraints on rail service capabilities while

ensuring safe working conditions and competitive wages for employees.

3. Modification of laws and regulations that burden railroads, as compared with both their competitors and their customers, with excessive costs.

There are also some specific traffic opportunities:

1. Improved intermodal connections via New York City (e.g., using road railers for perishables);
2. Special services for moving bulk commodities to or from New England ports;
3. Improved rail and port coordination in Boston;
4. Possible coal movements to utilities;
5. Enhanced transport service to the paper industry;
6. Possible industrial development of former military facilities at Quonset/Davisville, Pease Air Force Base, and Ft. Devens; and
7. New techniques for solid waste collection and disposal.

There are also opportunities for more aggressive, customer-oriented marketing as well as better cooperation among the region's railroads and the state transportation agencies.

STATE GOVERNMENT ACTIONS AFFECTING RAILROADS

The ability of the states to stem or reverse the decline in rail service is somewhat limited because the decline is so closely related to fundamental trends in transportation economics and industrial development. In addition, the railroads constitute, for the most part, private enterprise, and government intervention is constrained. Nevertheless, the states do have a number of options available:

1. Direct financial support,
2. Support for light-density rail lines,
3. Indirect financial assistance,
4. Promotion of economic development in industries that are well suited to rail service,
5. Promotion of intermodal transportation,
6. Regulation of railroads,
7. Regulation of competing modes,
8. Assistance for railroad rationalization,
9. Forced restructuring of the rail network, and
10. Public acquisition of lines.

State involvement in freight rail service was greatly motivated by the passage of the Regional Revitalization and Regulatory Reform Act of 1976 (4R Act). In order to be eligible for federal funding assistance, each state was required to establish and publish an acceptable rail plan representing the state's official rail policy. The Federal Railroad Administration was responsible for reviewing the plans. Although this source of rail assistance funding has practically disappeared, many states are continuing to update rail plans and to research options for state freight rail policy. A new impetus for state rail planning comes from the passage of the Intermodal Surface Transportation Efficiency Act (ISTEA) in 1991.

The objectives of the New England state rail plans are summarized as follows:

- Promote a balanced, integrated, and financially stable transportation system:
 - Include rail planning in overall transportation planning,
 - Eliminate regulatory disincentives,
 - Ensure adequate connection to regional, national, and international systems;
- Preserve essential freight services;
- Coordinate with regional and national transportation programs;
- Mitigate the effects of reductions in rail service:
 - Provide sufficient time for relocation of economic activities,
 - Support preventive measures to avoid abandonment,
 - Provide alternatives to abandonment;
- Promote environmental and safety aspects of freight transportation;
- Promote private-sector involvement in provision of freight transportation services; and
- Preserve abandoned rail corridors for future use.

These objectives are stated in the context of the overall state transportation planning process to emphasize the fact that rail planning must be viewed in a larger context.

Most state policies have evolved in response to the line abandonment process. The Local Rail Service Assistance Act of 1978, now known as the Local Rail Freight Assistance Act (LRFA), which amended the 4R Act, authorizes federal funds to be used for specific projects involving acquisition, rehabilitation and improvement, substitute service, rail facility construction, and rail service planning assistance.

State actions affecting other modes are also important to rail freight service. Truck size and weight limits, tolls, and user fees are critical because they affect the operating costs of heavy trucks that compete with railroads. These policy options are also issues in which regional coordination is especially important, because multiple and conflicting regulations complicate transportation operations.

NEED FOR RAIL SERVICE

Rail freight transportation is needed to the extent that the use of rail provides the most efficient use of resources, taking into consideration the costs of transportation, customers' logistics costs, the states' highway costs, and externalities such as environmental impact and safety. Shippers have the options to ship by one or more rail routes, by truck, or by intermodal systems. Analysis of selected hypothetical movements in New England showed that there are indeed many freight movements that can be handled more efficiently by rail than by truck (as reported in the final report to NETC).

It was concluded that there is still an important role for rail transportation in New England. Although railroads are no longer needed to provide a ubiquitous network for both freight and passengers, there are some important niches served by rail. Rail is clearly the most efficient mode for moving large quantities of bulk commodities to inland points. For large shipments of general merchandise, rail offers cheaper alternatives for medium- and long-distance hauls, although the rail advantage is lessened by the effects of longer trip times on inventory and other logistics costs.

The impacts of added trucks on highways were also considered. Highway costs could rise substantially if significant portions of the traffic carried by the rail system were diverted to highways (13, 14).

Pavement costs would rise with greater truck traffic, as would the likelihood of accidents involving trucks. The greatest impacts would be felt on the state and local roads that serve high-volume rail customers shipping bulk commodities. Congestion at bridges or in small towns could also be a problem if large volumes of coal, sand and gravel, or other bulk commodities were transported by truck on an essentially continuous basis. For the interstate system, which is generally built to standards superior to those for state and local roads and which already carries high volumes of truck traffic, diversion is not likely to cause as great a problem.

CATEGORIZATION OF NEW ENGLAND RAIL NETWORK

As the first step in defining a core network for the region (Figure 2), New England rail lines were classified into categories: regional and secondary main lines, major branch lines, alternative links to the national network, and lines of purely local significance. Regional main lines are important to New England on the basis of either current traffic or a clear potential for future traffic. They can be expected to remain in service indefinitely under almost any future scenario. The major regional lines were determined by examining both passenger and freight operations. First, all current Amtrak routes between major points were selected, along with selected commuter routes:

1. The Northeast Corridor from New York City to Boston (Amtrak's Shore Line);
2. Conrail's New England Division main line, which connects Boston to Selkirk Yard, a major classification facility just south of Albany, New York;
3. The original Amtrak route along the Connecticut River line from New Haven to White River Junction, continuing along the CV line to Montreal (CR, B&M, CV);
4. The Amtrak commuter route to Hartford (via Milford, Waterbury, and Newington); and
5. The MBTA North Station commuter lines from Boston to Salem (part of the eastern route), Boston to Lawrence (part of the western route), Boston to Lowell (the New Hampshire main line), and Boston to Ayer (part of the Fitchburg route).

Rail passenger demand is growing, and these lines are likely to remain in passenger service indefinitely, with one exception. If Amtrak service were rerouted through Vermont, the new Amtrak route would become the regional main line through Vermont. Portions of the commuter lines north of Boston are included because they serve locations within metropolitan Boston that have been important for freight service in the past and provide access to the old B&M terminal facilities in the Boston metropolitan area. To the south and west, the most important commuter lines (to Framingham and to Providence) are already in the regional core network because of their Amtrak service. The other commuter lines south of Boston are not included because they have little or no freight traffic and would not add to the connectivity of the regional network.

Next, the main lines carrying the highest volume of freight traffic were selected:

1. The B&M line from Ayer to Worcester (which is now the B&M's major interchange with Conrail),

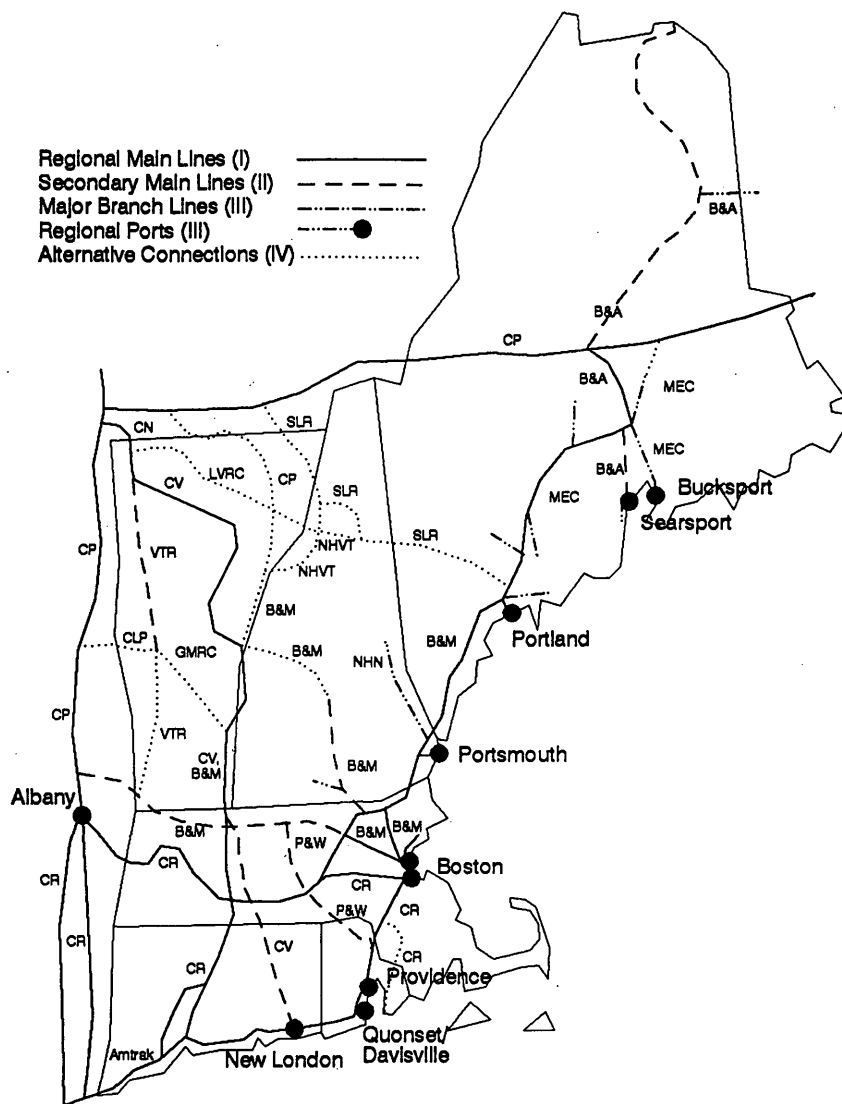


FIGURE 2 New England rail system.

2. The B&M line from Ayer to Lowell Junction to Portland (the new B&M main line, which includes part of the old western route from Boston to Portland),

3. The MeC main line from Portland to Northern Maine Junction in Bangor,

4. The BAR main line from Northern Maine Junction to Brownville, and

5. The CP main line from Montreal across Maine to the New Brunswick border (part of the line between Montreal and St. John, New Brunswick).

The Conrail main line from Boston to Albany is that railroad's main line in New England, and it also serves as the major route to and from points south and west of New England. The B&M and MeC main lines are the primary routes between Maine and southern New England. These lines serve the important lumber and wood products and pulp and paper industries of southern Maine. The BAR main line provides the most direct and most highly utilized route to northern Maine as well as a link to the CP main line, which provides

alternative service to the west as well as a connection to Canada's maritime provinces.

For completeness and coherence, the major lines defining the region's boundaries on the west and the north should be mentioned, even if they are not part of the New England system. The CP main line from northern Maine into Canada provides alternative west-bound connections to locations in northern New England. The CP line from New York City to Albany, which was formerly owned by the Delaware and Hudson Railroad, serves as a nearby alternative route to points in Canada. Likewise the CR lines down the east and west banks of the Hudson between Albany and New York City and New Jersey are shown because they provide the actual routing of freight to the mid-Atlantic and southern states (since through freight has been diverted from the Northeast Corridor).

The next group of lines includes the secondary main lines of the regional roads operating in New England. For the most part, these secondary main lines currently have no passenger operations and lighter-density freight traffic than the regional main lines. The following lines are included:

1. The B&M main line from Ayer to Mechanicville, where it connects with the D&H (CP);
2. The PW main line from Gardner to Providence;
3. The remainder of the CV line extending from E. Northfield, Massachusetts, to New London, Connecticut (the route currently taken by Amtrak's *Montrealer*);
4. The remainder of the BAR line from Bangor south to Searsport and from Brownville north to St. Leonard, which connects to the CN and serves the northern Maine forest product industries;
5. The Vermont Railway line between Burlington and Rutland, which links two of Vermont's largest cities; and
6. The B&M line to Manchester and onward to Concord, which provides the only rail service to south central New Hampshire.

Since the PW line provides the only active freight access between Rhode Island and the national network, this line has an important strategic role for the region. The other lines in this secondary group have regional implications, but on a smaller scale than the line in the preceding group.

The third category consists of major branch lines and rail links to the region's major ports. There are several important branch lines serving the forest products industries in Maine, as well as the New Hampshire Northcoast line in southeastern New Hampshire, which handles a great deal of sand and gravel. In the Boston area, the most important stations historically are those on the commuter routes. The Hillsboro Branch in southern New Hampshire is shown as a dotted line in Figure 2 because a gravel pit on this line could potentially have significant traffic moving to Boston as part of the depression of the Central Artery.

A fourth category of lines includes alternative links to the national rail networks of the United States and Canada. There are five areas of interest:

1. The access lines to the forest products industry of northern New Hampshire and southern Maine,
2. The possibility of a more direct link between Montreal and southern New Hampshire-Boston via the Northern Railroad,
3. Possible access to southern New England via Vermont,
4. Alternative access to the CP via the MeC line from Old Town to Mattawamkeeg, and
5. Alternative access to Rhode Island from CR and Fall River in eastern Massachusetts.

It was beyond the scope of this study to determine which of these, if any, should be considered part of a regional core network. There is insufficient traffic to justify including all of these routes within the core. Their primary importance is that they maintain the possibility of alternative routes to a significant portion of New England.

The last category contains all of the remaining rail lines, which have little if any regional significance and can be dealt with effectively by existing state policies. Many of these lines are addressed in various forms in the state rail plans; some of them are state owned. Although these lines would probably not be included in any kind of regional policy effort, they might be important at the state level or simply at the local community level.

As can be seen in Figure 2, access to multiple northern and western gateways is provided, the highest-density main lines are included, and all of the major ports are served. The core network also serves the sites that have greatest potential for future growth. The major natural resources of the region are the ports and the forests, which have already been well developed and which are

served by the regional core network. Emerging resources suitable for rail transport, such as extractive aggregates and solid waste, are likely to be served by this network. The major factor driving future regional growth is likely to be the existence of a labor market, utilities and other infrastructure, financial services, and access to airports, in other words, proximity to an urban area. The regional core network serves all but 20 cities with population greater than 10,000, assuming that metropolitan Boston is considered to be a single entity.

In summary, the 4,852 mi of the New England rail network was divided into the following five categories:

1. Regional main lines: 2,240 km (1,391 mi) (29 percent),
2. Regional secondary lines: 1,047 km (650 mi) (13 percent),
3. Major branch lines and connections to ports: 388 km (241 mi) (5 percent),
4. Alternative connections to the national networks: 100 km (622 mi) (13 percent), and
5. Other lines: 3,136 km (1,948 mi) (40 percent).

The first three categories can be considered to be the regional core network, along with some of the lines in the fourth category. The core network therefore includes roughly half of the total rail mileage in the region, depending upon how many of the alternative connections are included.

ELEMENTS OF LONG-RANGE REGIONAL STRATEGY FOR NEW ENGLAND

Objectives for a regional plan are recommended and the elements that might be included in a long-range regional strategy are presented. No attempt is made to define the final strategy, which must be the focus of continued cooperation among the state rail representatives. Objectives and recommendations are listed in order of importance as viewed by the authors.

The basic objectives from a regional perspective are similar to those for a state, given earlier. First, there is a need for a balanced, integrated, and financially stable transportation system. Railroads are important only as a part of a larger transportation system that is constantly evolving to reflect changes in technology, economic geography, relative prices, and customer service requirements.

The next most important objective is to preserve essential freight services, not all services. There is a common interest in the service provided over major corridors and connections to the national and international systems, including both the rail links to Canada and to the region's ports.

Third is to coordinate with national transportation programs. Federal actions concerning rail regulation, truck regulation, truck size and weight, and other matters have been shown to be critical factors in the decline of rail service. Although it is not worthwhile to promote rail as always somehow better than truck, it is worthwhile to promote equitable treatment of rail and other modes.

The fourth objective centers on the externalities of freight transportation. Railroads offer environmental benefits relative to trucking in the areas of air quality, highway congestion, and fuel efficiency. Transportation of hazardous materials and the safety of LCV trucks are examples of regional issues related to rail freight transportation.

Fifth is the continued provision of efficient, financially viable rail services through the private sector. To remain competitive,

New England industries require competitive transport services, which worldwide experience has shown to be best provided by the private sector.

The final objective is to preserve the rights-of-way of abandoned lines for future use. Except for short, stub end lines or lines that closely parallel others, any line could conceivably be part of a right-of-way with some regional significance, so that coordinating state responses are desirable.

The basic recommendation of this research is that the New England states should work together to establish a long-range plan for regional policy toward the New England rail system. The first step is to establish a regional forum for rail planning. A regional forum is necessary because so many issues concerning rail policy are better addressed in a coordinated manner at the regional level. At the outset, the regional forum could simply involve quarterly meetings of the state rail planning officials to discuss current concerns and to exchange information. However, broader responsibilities can be envisioned, and the regional forum could ultimately take on five major responsibilities:

1. Prepare a regional rail plan and update it at regular intervals;
2. Monitor regional rail service;
3. Exchange information concerning rail operations, rail investments, and rail planning methodologies;
4. Coordinate and enhance state policies affecting rail transportation; and
5. Supervise research on regional rail issues.

Over time, the states could evolve a common approach to dealing with the major issues concerning rail and freight transportation, which would simplify coordination among states and facilitate cooperation among the states and the railroads. By consolidating resources and adopting a regional perspective, the states could work more effectively with the railroads toward their common objectives of promoting safe, efficient freight transportation and economic development of the region. As the rail passenger service evolves, steps should be taken to ensure safe, efficient freight access to locations along the passenger lines. The states should also work together in areas such as solid waste management and port development, where a regional approach could yield more effective solutions that make use of the capabilities of the rail system.

To be effective, the regional forum would require enough resources to study important issues and to develop alternatives for consideration by the individual states. Funding for such studies could come from a variety of sources, including federal planning grants, state planning grants, and contributions from New England railroads and shippers. (Indeed, following the completion of this study, the New England states were successful in obtaining federal funding for a study of intermodal transportation in the region.)

The regional rail plan could be structured along the lines of a state rail plan, but it would have a significantly different focus. Whereas state rail plans are to a large extent motivated by the issues surrounding light-density lines, the regional plan would be motivated by issues related to the core system and marketing. It should include the following sections:

1. A statement of objectives;
2. A description of the New England rail system focusing on the core system and identifying the location of major gateways, classification yards, intermodal terminals, connections to ports, and transfer facilities;

3. A summary of the service provided by the railroads (transit times and reliability for typical movements to or from New England locations, types of commodities handled, restrictions for high or wide loads, specialized facilities);

4. A discussion of industrial development opportunities that identifies major industrial sites and provides information concerning railroad marketing departments and government agencies concerned with industrial development and related areas;

5. Identification and prioritization of possible improvements to the system that would require assistance from two or more states (not necessarily or solely financial, but also administrative assistance in dealing with state and local regulations); and

6. Identification and discussion of significant regulatory or administrative issues affecting the New England rail system.

The rail plan (or perhaps a summary of the plan) could be used as a marketing tool for industrial development. Periodic updates would be necessary to maintain current information.

SUMMARY AND CONCLUSIONS

Although rail is no longer the dominant mode that it once was, there is still a role for rail in the movement of bulk commodities and in the medium- to long-distance movement of manufactured commodities. For both bulk and containerizable freight, railroads are important partners in intermodal transportation. By keeping some traffic off the highways, a competitive rail system reduces state and local costs for pavement and bridges and also reduces the public's exposure to traffic accidents.

The New England states have each taken action to preserve service, to upgrade rail lines, and, in general, to promote rail service. Their rail plans cite the need for a balanced approach to freight transportation and the need to consider societal costs, such as highway costs and safety, in formulating policies concerning freight transportation. Their plans are weakened, however, by their emphasis on issues related to light-density lines and their focus on parochial issues.

Many aspects of railroad operations in New England are better considered from a regional than a statewide perspective. The states are all small, and the structure of the rail network is not based upon state boundaries. The great bulk of rail traffic passes through two or more states, so actions taken by one state are likely to affect traffic flows throughout the region. The states each have very limited resources for dealing with rail transportation, and it is important to channel those resources effectively. A regional approach to improving rail transportation is therefore desirable, and this paper has presented a framework for initiating a regional rail planning process.

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