

DEVELOPMENT OF STATE RAILROAD PLANNING

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As a result of new federal legislation, a number of states have begun to develop railroad plans. This paper reviews the history of government planning for railroads in the United States, examines the requirements of present laws, and outlines primarily through reference to activities under way in Wisconsin what a rail plan can contain and what rail planning might accomplish. Alternative futures for rail planning are then postulated. Included is a survey form pertaining to the major data-gathering effort in the Wisconsin plan—a detailed census of more than 11,000 business establishments in the state.

•AMONG the major transport modes, only railroads have been relatively neglected in recent years by government transportation planners in the United States. Tremendous post-World War II activity in planning, implementing, and financing highway and air-transport systems involved state, local, and national agencies playing reasonably coordinated roles. Inland waterway investment expanded, toll-free; ocean shipping was further subsidized at federal direction; ports obtained local and state support. Transit is increasingly viewed as a public responsibility at all government levels. And, in each of these transport fields, planning procedures and documentation evolved in concert to guide government strategy.

This has not been the case with U.S. railroads. During the last several decades, government action has been begrudging and almost solely of a negative type rather than promotional. Governments have stepped in to resolve conflicts at highway-rail grade crossings, service declines on branch lines or commuter rail routes, rate increases and competitive rate adjustments, freight-car shortages, and financial failures. The reasons for lack of government interest in support of the rails, compared with the situation in other countries, are undoubtedly numerous. Of course, for one thing no substantial portion of the population any longer travels by rail, and, in general, public attention is more keenly directed toward the passenger-carrying modes. Too, investment aid seems lavished primarily on new technologies, and the rail system ceased geographic expansion around the turn of the century. Government planners themselves seem interested in pressing beyond rail issues to the development of comprehensive programs for all transportation.

Yet the political, social, and economic climate is quickly changing. Added to steady environmental concern and the relative efficiency of the railroads for certain hauls are rapid inflation, energy and materials shortages, and the prospect of continued population growth and accelerated world pressure on sources of supply. Meanwhile, planners and social scientists have been slow to devise practical methodologies for accomplishing the modal trade-offs necessary to comprehensive planning, making the single-mode approach the most immediate means of producing investment programs. No new transportation or communications technologies seem close to meaningful implementation for the solution of transport ills. Relative neglect of the rail sector by government is ending. It still remains unclear whether rail transportation can contribute significantly to the solution of many national problems or whether the privately owned carriers should best be viewed henceforth primarily as instruments for the achievement of public policies in the United States (1, 2). Before the government is the prospect of focusing more attention on optimizing use of the rail system through mechanisms such as line rationalization, regulatory and pricing changes, constraint of other modes, and government subsidy or assistance in various forms. A new challenge, another field, and new responsibilities therefore face government transportation planners.

BACKGROUND OF RAILROAD PLANNING

Of course, the financial decline of rail transportation due to basic underlying forces has been recognized for decades (3). Despite technological improvements equal in some ways to those taking place in the other surface modes, the relative shares of intercity freight tonnage and revenue have been declining in the rail industry. But why should this decline not proceed, just as so many others have in a dynamic, progressive economy where firms and industries continually shift relative positions, go into decline, or emerge as suppliers of newly important goods or services? The necessity of forcing a change in public response toward the railroads has become apparent only with the realization that continued rail decline cannot be allowed to progress simply because there is no other mode capable of taking the place of railroads as a common carrier of freight. And with the effects of the Penn Central bankruptcy being felt, decline had gone sufficiently far by 1973 that major geographic areas were faced with either a complete loss of rail carriage or service so marred by safety hazards, lack of equipment, and uncertainty that it was nearly useless.

REGIONAL RAIL REORGANIZATION ACT

The threat of additional, far-reaching bankruptcy and service loss, specifically in the northeastern states, was a key influence in changing congressional attitudes about the government role in rail transport. After extensive investigation and a variety of proposed responses, the Regional Rail Reorganization Act of 1973 became law on January 2, 1974. Sponsored as a means of stopping the spread of chaos among shippers and receivers of freight, which appeared likely to result from closure of the bankrupt Penn Central, the RRR Act has numerous provisions and broad implications. It calls for a reorganization of all bankrupt roads in 17 northeastern and midwestern states plus portions of three contiguous states (as defined by the Interstate Commerce Commission) into an economically (and environmentally) viable system that is responsive to national and local demands for low-cost movement of goods and persons, energy conservation, and national defense. (The states involved are Maine, New Hampshire, Vermont, Massachusetts, Connecticut, Rhode Island, New York, New Jersey, Pennsylvania, Delaware, Maryland, Virginia, West Virginia, Ohio, Indiana, Michigan, and Illinois plus the District of Columbia. The contiguous states, portions of which were involved, are Kentucky, Missouri, and Wisconsin.) Several new agencies were established: the U.S. Railway Association (USRA), to plan the system and distribute subsidies to states and localities for operations not made part of that system; the Consolidated Rail Corporation (ConRail), to operate the new railroad; and the Rail Services Planning Office (RSPO) of the Interstate Commerce Commission, which has responsibilities for promoting public participation in the entire effort, critically reviewing the planned system, and setting subsidy standards and other regulations.

After the USRA has developed a detailed step-by-step plan, the bankrupt railroads are to have their properties either (a) transferred to ConRail, (b) bought by a profitable railroad in the region, (c) purchased by or leased to Amtrak, (d) purchased or leased from ConRail by a state or local transportation authority for rail passenger service, or (e) used for other public purposes (4).

The rail system of the entire region will be shored up to retain a basic, minimum level of service. Initial financing to bring about the system involves \$1.5 billion in federally guaranteed loans and \$558.5 million in grants—including \$180 million to subsidize or purchase lines that might otherwise be abandoned.

The RRR Act, then, produces a quasi-nationalized railroad supported by federal subsidies, and, through application of extensive planning processes, it allows additional government aid for other, non-ConRail operations. The act sets in motion the first substantial rail planning attempt by government since World War II.

EARLY RAILROAD PLANNING

There should be no misunderstanding, however, concerning past governmental traditions of rail planning. Despite the early promise of the Gallatin plan, assistance from every level of government to rail firms as they laid track during the midnineteenth century and later, and some uncertain degree of continuing governmental direction as a concomitant of economic regulation, the U.S. rail system was not rationally or carefully planned. The government could have taken a much different approach.

The Windom Committee report (which preceded federal control of monopoly practices under an 1887 act to regulate commerce) recommended national or state ownership of one or more railroads to secure competition and provide an example to the private sector (5). That model railroad, at least, would have been subject to planned development; however, the competitive emphasis of the Windom Committee report was shifted by the later Cullom Committee, whose concern was eliminating discriminatory practices. Thereafter, history records a 30-year hiatus for federal planning.

Previously, the most hopeful period for public rail planning began with the President's proclamation of December 26, 1917, placing the railroads and waterways of the country under federal operation for the war emergency. When the railroads were returned to private operation in 1920, the provisions of the radically different Transportation Act of 1920 required the Interstate Commerce Commission to adopt a voluntary plan for rail consolidation (6). After 2 decades of effort, including studies by the Office of the Federal Coordinator of Transportation under the Emergency Transportation Act of 1933 and the publication of several plans, no consolidations took place; the Transportation Act of 1940 removed the requirement (5, p. 251). The work of neither the Board of Investigation and Research, the National Resources Planning Board, nor any other World War II agency produced an acceptable plan for railroad operation (7). On the other hand, even as late as 1920 the free-entry policy and competitive service conditions in the U.S. rail industry, together with large capital requirements and the economies of scale and use available to the rail firm, had enabled the United States to put in place a reasonably efficient network without the necessity for comprehensive transport planning. The growth of new modes, plus revised government policies, has completely overturned that philosophy.

The RRR Act therefore stands out as the first modern attempt at large-scale rail planning by a nation with no history of success in the field. It is also the first attempt to switch from the past dismal results of centralized planning either solely within federal agencies or between federal government and the private sector to include state government in the process. The act is distinguished by the attention paid to state and regional government bodies and in that regard parallels other federalized transport activities in the United States. The new emphasis is appropriate because investment and promotional decisions that upset intermodal balances are often effected by the states.

STATE ROLE IN RAILROAD PLANNING

States and localities were very much involved with railroad operations before the existence of federal legislative direction (8, 9). But long-term planning of railroads by the states and even by the industry has been fragmented, uneven, and generally non-responsive to public concerns.

Title IV of the Regional Rail Reorganization Act, entitled Local Rail Services, brings the states into the planning field by establishing subsidies for continued operation of rail lines that are not economically self-sustaining but that are important to local government for some other reason. Title IV sets the following conditions for subsidy eligibility (10):

1. The state must have established a plan for rail transportation and local rail services that is administered or coordinated by a designated state agency and that provides for equitable distribution of subsidies among state, local, and regional transportation authorities; and

2. The state agency must have authority and administrative jurisdiction to develop, promote, supervise, and support safe, adequate, and efficient rail services.

The process used is to be "comprehensive, coordinated and continuing" and designed to provide services that the state believes to be "essential to meet the economic, environmental, and energy needs of the citizens . . . and to provide for the development of a coordinated and balanced transportation system." Further, the state must promote public participation and hearings and must provide various groups the opportunity for review and comment.

The plan itself, to be acceptable, should contain and be based on

1. What the state wishes to achieve through plan implementation and the state goals set for rail lines selected for subsidy;
2. A documented, acceptable process used in plan production;
3. Data on existing rail service and facilities, present and future rail service needs, modal substitution possibilities, economic, social, and environmental benefits and costs of alternatives, competitive effects, and means of achieving operation economies; and
4. A classification of the rail system by categories of lines (12).

These are concise and difficult requirements, inasmuch as no state or local planning base for rail planning existed. Moreover, they appear to exceed the planning required of federal agencies involved with rail reorganization. Evidently, states wishing to obtain federal funds have no choice but to mount thorough, intensive study efforts (the time-span allowed under the act is very short); the states under the jurisdiction of the act almost without exception began such efforts within a few months after the act went into effect in 1974.

Goals of the Rail Plan

The first step taken by most of the states in preparing rail plans was to postulate and adopt goals for the plan that set directions for rail transport in relation to the other transportation modes. After this initial action, the planning process should be tailored to achieve those goals as fully as possible, given the planning and implementation resources at hand (13).

Table 1 gives goal statements obtained from documents of two states, Wisconsin and Michigan, that are cooperating closely in their planning programs, particularly regarding joint ferry services on Lake Michigan. Both states have obtained research grants from the FRA, as well as from the Upper Great Lakes Regional Commission, to supplement their own resources (from \$350,000 to \$500,000 per state for a 12-month period), and input from their efforts will be part of a manual on rail planning now in preparation for wide distribution to interested states. Yet there are important differences between their goal statements. For Michigan, the statements are far-reaching and cover all conceivable desires of rail users. Conflicts among goals could easily arise for either state, but conflict possibilities stand out most strongly in the statements produced by Michigan. On the other hand, Wisconsin's goals lack specificity; What, indeed, can be done to measure net social benefits? Nevertheless, such lists should be an initial undertaking, and then, to the extent possible, the rail goals should be integrated with general state transportation policy statements.

The Rail Data Base

The information needed for state rail planning is perhaps less difficult to determine than are the goals of the plan. The data are, however, difficult to acquire. Moreover, the expense of collecting data rises proportionally with the thoroughness and detail of information desired. The cost of removing uncertainty, such as that needed to specify, say, 90 percent of the freight flow by commodity and tonnage, is great, except in the

Table 1. Goals of state rail plans.

State	Goals
Wisconsin	Provide an efficient rail transport system; make rail service decisions on the basis of total net social benefits; eliminate obstacles to intermodal transfers to promote modal integration; provide varied services to satisfy different social needs; promote a safe rail system; use the rail system to promote desirable development and to discourage overdevelopment or development in undesirable areas; create a balanced and coordinated transportation system that provides adequate, safe, and convenient transportation for all segments of society in an equitable manner and at a reasonable cost.
Michigan	Provide and maintain an adequate and efficient rail network; give consideration to the effects of changes in the rail system on the loss of jobs, decreases in tax revenues, and increases in welfare costs; promote financial viability within the system; maintain and improve the quality of rail services; promote stability in the rail services offered; provide rail services that meet public needs in terms of economic stability and development, social stability and development, and environmental protection; provide for and encourage economic and social growth and development; maintain rail services where economic and community growth show that such service is vital to continued prosperity of the region; provide rail services to the more remote parts of the state and avoid isolating any parts of the state from the rail network; avoid obstructing plans of private enterprise for increasing business and adding jobs; provide transport for commodities that are not amenable to shipment by alternative modes; maintain and improve essential services to agricultural communities; maintain and improve safe commuter rail service; explore the potential for implementing high-speed intercity rail service; ensure the safety of rail operations; maintain some excess capacity on the system; provide an adequate level of freight-car availability; maintain environmental quality, preserve natural areas, and improve energy efficiency of transportation; encourage cooperative service and the sharing of rail facilities; promote competition among transportation services and control the rates charged for noncompetitive services; enable local participation in subsidy funding to a degree consistent with the local importance of the service; minimize and compensate adverse effects on rail employees.

instance of specific key decision points, e.g., a particular branch line, a line segment where joint use of track is a possibility, or a junction point where competitive service is a special concern.

Compounding the difficulties of developing a rail data base is the fact that railroads infrequently fall within the boundaries of one state; data gathered by state or federal regulatory bodies must be prorated. Further, line-by-line data must be more specific than those that are typically available to outside parties so that individual line or line-segment viability can be determined. Also not likely to be collected is information on the social or environmental consequences of revising rail services. Although both the FRA and USRA hold significant data elements, only the railroads themselves and their customers can provide a major portion of the data.

To be gathered for a state plan are facts about traffic flow, composition, services, and rates; shipper attitudes toward and use of all modes; rail costs and costs of alternatives; and needs, desires, or plans of shippers and carriers. To indicate the types of data that are desired and to illustrate one instrument by which they may be obtained, a survey form was supplied to more than 11,000 firms in Wisconsin (including the entire manufacturing sector identified by five-digit SIC code).¹

Although data collection of such magnitude and resultant data manipulation are extremely expensive—which should make planners wary of allocating most of their budgets to obtaining data and leaving too few resources for analysis—such an approach appears to the writer quite short-sighted. Rail planning is neither static nor a one-time affair. Time-series compilation should begin no later than at the inception of the planning process.

Demand Forecasts

Along with the current data base, forecasts must be made. The shipper survey cited can aid in providing projections and can be used in making short-run estimates to 1978 and 1980. Forecasts of future demand for the railroads and railroad supply conditions generally can be made either through scaling down national projections or by using specific survey and judgmental input.

¹The survey form, which was Appendix 1 in the original manuscript, is available in Xerox form at cost of reproduction and handling. When ordering, refer to XS-65, Transportation Research Record 577.

Wisconsin Example

Illustrative of the data collection, forecasting, and initial analysis phases of state rail planning are the tasks accomplished or to be undertaken for the Wisconsin rail plan.

1. The freight-operations phase involved detailed analysis of the data obtained in relation to factors such as present and potential economic activity, social and environmental impacts, and financial viability indicators. The steps include (a) defining freight subsystems, segments, and lines and preparing system segmentation maps; (b) collecting and assembling a total system freight flow data base; (c) developing a freight flow model; (d) preparing tabulations of Wisconsin freight flows; (e) developing freight projections; (f) conducting shippers' surveys; (g) analyzing the economic impact; (h) determining environmental and energy impacts; (i) analyzing the financial feasibility of rail operations; (j) developing rail operating and rehabilitation cost data; and (k) developing a transportation analysis package and running alternative simulations.

2. A particular subset of the freight operations phase was applied to Lake Michigan ferry operations and consisted of (a) inventories of physical plant (vessels, terminals), traffic (rail, automobile, truck, and passenger), user dependency (commodity and shipper surveys), ferry boat service and rates; (b) generation of alternative car ferry configurations, including route networks, service levels, and connections; (c) traffic forecasts by mode and route configuration; (d) impact assessment of alternatives for the planning period on costs (capital and operating), community service (employment and economic growth), environmental and energy considerations, rates, and routings; and (e) identification of institutional and funding arrangements and implementation possibilities.

3. The passenger service phase involves a comprehensive study of current Amtrak service and the potential for expanded passenger service in Wisconsin. This phase involves (a) determining passenger attitudes toward Amtrak and commuter train services through on-board surveys; (b) determining community attitudes on the desirability of expanded passenger service by using mail-out surveys to a sample of Wisconsin households; (c) collecting city-pair travel data for all transport modes so that the effect of improved rail passenger service on automobile, bus, and airline travel patterns can be evaluated; (d) forecasting ridership potential for both present and expanded rail service; (e) estimating the cost of expanding rail passenger service; (f) analyzing demographic and socioeconomic data to select new routes that have the best potential for expanded service; and (g) examining the social, environmental, and energy impacts of present and future rail passenger service to evaluate total social costs and benefits.

Elements of the Final Plan

The end result of successful data gathering, modeling, and simulation will be the generation of alternatives for the rail system, for shippers, and—to a limited extent—for competing modes. The state should be able to determine within some probability bounds what could happen were a merger to be effected, a branch line to be abandoned, operating costs to shift, or a new investment in plant or equipment to be effected. Priorities can then be set on line-segment reductions in order to allocate budgeted support funds. If goal priorities change, for example, to elevate unemployment concerns for a state or substate area, appropriate weights can be revised and new priorities can be obtained. How closely any state plan approaches this idealized description depends crucially on the data obtained and on the ability of the state to devise or adapt trade-off methodologies and analytical packages.

Clearly, the end result of rail planning relates more to yielding a process that will improve over time or an evolving tool that will answer the questions raised by decision makers than to providing a standardized document. With such a tool in hand states will be able to answer questions about whether railroad changes can help solve social problems. Of course, even the best rail planning process and single-mode analysis package cannot determine whether more effective means than manipulation of railroad or transportation instruments exist for the achievement of social goals.

ISSUES IN STATE RAIL PLANNING

The possibilities for meaningful state railroad planning and programming are vast, given the development of accurate planning processes, as described in this paper, and revised institutions. But major questions remain to be answered.

Are States the Proper Geographic Regions for Rail Planning?

The RRR Act identifies states as the primary focus for subnational actions involving railroads. Yet states differ tremendously in area, interests, and other attributes related to rail planning. Rail systems most frequently traverse state boundaries, thus making regional compacts necessary for such significant major actions as revising main-line configurations. Are not more intensive, nationwide federal rail planning and plan implementation superior to confederation? If not, what division of responsibility is best?

Does Rail Planning Conflict With General State Transportation Planning?

Today's methodologies are insufficient to permit comprehensive and coordinated planning of the total state transportation system, particularly when short-range priority setting or programming is necessary (11, 12). Is it possible to apply simulation techniques to the rail sector, and, if so, should suboptimization in rail transport occur? Long-term answers to these questions are perhaps impossible. The criticality of better management of rail resources in the United States and the immediacy of federal subsidy programs leave only one response. Rail plans must be developed. To the extent that rail systems, especially freight systems, are far simpler than total transport networks, the modeling effort is likely to prove successful in the larger sense.

How Might State Railroad Activities Be Financed?

Although rail planning is a new challenge for the states, it is relatively inexpensive. But plan implementation raises difficulties in providing matching shares for federal operating subsidies, assisting in rail line renovations, and helping relocate industry. Any form of user charge is likely to be instituted only with great difficulty. General state transportation funds are uncommon, and highway funds almost certainly will not be available for any major rail demands. If the rail sector requires extensive subsidy, the money can come only from federal or state general funds. The more pertinent question, though, is whether heavy or long-term subsidy is required. Most likely proper pricing of the several modes and removal of regulatory handicaps could prevent state budgetary drains. To this end, state support might well develop for substantial federal reform.

ALTERNATIVE FUTURES FOR RAIL PLANNING

At the minimum, the flurry of plan preparation and rail system investigation set in motion by the RRR Act is likely to greatly change state perceptions of the rail mode and to induce greater awareness of railroad concerns in state transportation decision making. Because rail planning is likely to expand with or even precede the probable increased coverage of the act and its successors, government promotion policies will be significantly revised in support of at least continuing at present levels the role of rail in the nation's freight transportation system. Private railroads, too, may become more open institutions, more aware of their comparative advantages, and more capable of cooperative activities with state transportation agencies. Railroads will be treated

more closely on par with the other transport modes.

A hopeful outcome, unfolding during the decade of the seventies, will be the evolution of rail planning into general transportation planning wherein market forces and the direction of government resources from general-fund operating and capital budgets will be relied on as needed to remove bottlenecks and promote socially desirable services.

It is significant that the new beginnings of public planning activity for the U.S. railroad system can promise such far-reaching effects. If the initiation of railroad system planning can lead the states to effective multimodal planning, the northeast rail crisis will indeed have brought completely unforeseen benefits.

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